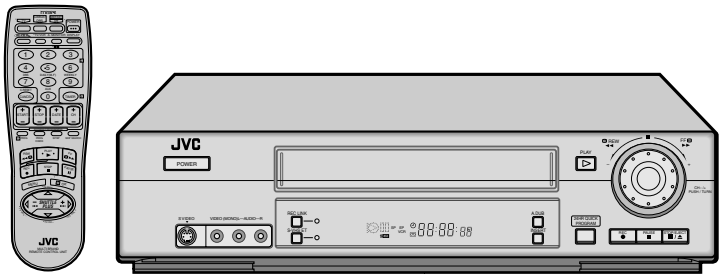
# JVC

# SERVICE MANUAL

## VIDEO CASSETTE RECORDER

# HR-S3910U, HR-S5910U



S-VHS Hi-Fi VCR Plus+ 3 Cable Box Control Super VHS ET

**Regarding service information other than these sections, refer to the HR-S3900U service manual (No. 82848). Also, be sure to note important safety precautions provided in the service manual.**

## SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-S3900U/S3910U/S5900U/S5910U)*

### GENERAL

| | |
|---|---|
| Power requirement | : AC 120 V~ , 60 Hz |
| Power consumption | |
| Power on | : 20 W |
| Power off | : 2.5 W |
| Temperature | |
| Operating | : 5°C to 40°C (41°F to 104°F) |
| Storage | : –20°C to 60°C (–4°F to140°F) |
| Operating position | : Horizontal only |
| Dimensions (W x H x D) | : 400 x 94 x 283 mm |
| Weight | : 3.3 kg |
| Format | : S-VHS/VHS NTSC standard |
| Maximum recording time | |
| SP | : 210 min. with ST-210 video cassette |
| EP | : 630 min. with ST-210 video cassette |

### VIDEO/AUDIO

| | |
|---|---|
| Signal system | : NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields |
| Recording/ Playback system | : DA-4 (Double Azimuth) head helical scan system |
| Signal-to-noise ratio | : 45 dB |
| Horizontal resolution | |
| VHS | : 230 lines |
| S-VHS | : 400 lines |
| Frequency range | |
| Normal audio | : 70 Hz to 10,000 Hz |
| Hi-Fi audio | : 20 Hz to 20,000 Hz |
| Input/Output | : RCA connectors (IN x 2, OUT x 1)<br>S-video connectors<br>For HR-S5900U/5910U:(IN x 2, OUT x 1)<br>For HR-S3900U/3910U:(IN x 1, OUT x 1) |

### TUNER

| | |
|---|---|
| Tuning system | : Frequency-synthesized tuner |
| Channel coverage | |
| VHF | : Channels 2–13 |
| UHF | : Channels 14–69 |
| CATV | : 113 Channels |
| RF output | : Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced |

### TIMER

| | |
|---|---|
| Clock reference | : Quartz |
| Program capacity | : 1-year programmable timer/ 8 programs |

Memory backup for timer is not supported.

### ACCESSORIES

| | |
|---|---|
| Provided accessories | : Infrared remote control unit, "AA" battery x 2, S-video cable (4-pin), RF cable (F-type) |

*Specifications shown are for SP mode unless specified otherwise.*
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**No. 82859**
**March 2001**

**[HR-S3910U/U(C)]**

**The following table indicate main different points between models HR-S3900U,HR-S3910U and HR-S3910U(C).**

| ITEM \ MODEL | HR-S3900U | HR-S3910U | HR-S3910U(C) |
|---|---|---|---|
| FRONT PANEL color | BLACK | PURE SILVER | ← |

**[HR-S5910U/U(C)]**

**The following table indicate main different points between models HR-S5900U,HR-S5910U and HR-S5910U(C).**

| ITEM \ MODEL | HR-S3900U | HR-S5910U | HR-S5910U(C) |
|---|---|---|---|
| FRONT PANEL color | BLACK | PURE SILVER | ← |

**[HR-S3910U/U(C)]**

**The following table indicate different parts number between models HR-S3900U,HR-S3910U and HR-S3910U(C).**

**PACKING AND ACCESSORY ASSEMBLY <M1>**

| ⚠ REF. NO | ITEM \ MODEL | HR-S3900U | HR-S3910U | HR-S3910U(C) |
|---|---|---|---|---|
| 301 | PACKING CASE | LP30899-001B | LP30899-005B | ← |
| ⚠ 310 | INST BOOK(FR) | — | — | LPT0503-002A |
| 316 | WARRANTY CARD | — | — | BT-52004-1 |
| 317 | REGIST.CARD | BT-51020-2 | ← | — |
| 319 | SER.NET CARD | — | — | BT-20071B |

**FINAL ASSEMBLY <M2>**

| ⚠ REF. NO | ITEM \ MODEL | HR-S3900U | HR-S3910U | HR-S3910U(C) |
|---|---|---|---|---|
| ⚠ 501 | FRONT PANEL ASSY | LP10289-063D | LP10289-068B | ← |
| 501A | CASSETTE DOOR | LP20868-035A | LP20868-039A | ← |
| 501C | DISPLAY WINDOE | LP20869-093A | LP20869-0A2A | ← |
| 501D | ORNAMENT | LP21014-001C | LP21014-002A | ← |
| ⚠ 502 | TOP COVER | LP10013-021D | LP10013-045A | ← |
| 503 | SCREW,X2 TOP COVER(SIDE) | QYTDSF3010M | QYTDSF3010R | ← |
| 529 | KNOB ASSY | LP30954-001A | LP30954-002A | ← |

**[HR-S5910U/U(C)]**

**The following table indicate different parts number between models HR-S5900U,HR-S5910U and HR-S5910U(C).**

**PACKING AND ACCESSORY ASSEMBLY <M1>**

| ⚠ REF. NO | ITEM \ MODEL | HR-S5900U | HR-S5910U | HR-S5910U(C) |
|---|---|---|---|---|
| 301 | PACKING CASE | LP30899-001B | LP30899-005B | ← |
| ⚠ 310 | INST BOOK(FR) | — | — | LPT0503-002A |
| 316 | WARRANTY CARD | — | — | BT-52004-1 |
| 317 | REGIST.CARD | BT-51020-2 | ← | — |
| 319 | SER.NET CARD | — | — | BT-20071B |

**FINAL ASSEMBLY <M2>**

| ⚠ REF. NO | ITEM \ MODEL | HR-S5900U | HR-S5910U | HR-S5910U(C) |
|---|---|---|---|---|
| ⚠ 501 | FRONT PANEL ASSY | LP10289-062C | LP10289-069B | ← |
| 501A | CASSETTE DOOR | LP20868-005A | LP20868-039A | ← |
| 501C | DISPLAY WINDOE | LP20869-092A | LP20869-0A3A | ← |
| 501D | ORNAMENT | LP21014-001C | LP21014-002A | ← |
| ⚠ 502 | TOP COVER | LP10013-021D | LP10013-045A | ← |
| 503 | SCREW,X2 TOP COVER(SIDE) | QYTDSF3010M | QYTDSF3010R | ← |
| 529 | KNOB ASSY | LP30954-001A | LP30954-002A | ← |

**Notes :** Mark — is not used.
Mark ← is same as left.

(Sanwa)-V14S1/S15
HR-S3910U/U(C), HR-S5910U/U(C)

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HR-S3900U/S5900U

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JVC

No. 82848

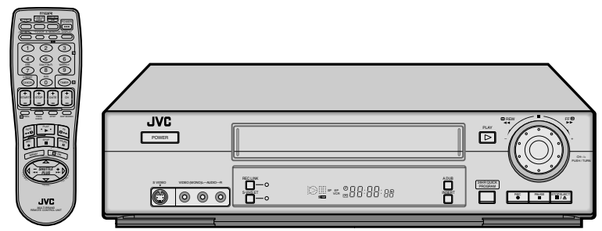
S40895-03

# JVC

# SERVICE MANUAL

## VIDEO CASSETTE RECORDER

# HR-S3900U/U(C), HR-S5900U/U(C)



S-VHS Hi-Fi VCR plus+ G3 CABLE BOX CONTROL Super VHS ET

## SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-S3900U/S3910U/S5900U/S5910U)*

### GENERAL

| | |
|---|---|
| Power requirement | : AC 120 V~ , 60 Hz |
| Power consumption | |
| Power on | : 20 W |
| Power off | : 2.5 W |
| Temperature | |
| Operating | : 5°C to 40°C (41°F to 104°F) |
| Storage | : –20°C to 60°C (–4°F to140°F) |
| Operating position | : Horizontal only |
| Dimensions (W x H x D) | : 400 x 94 x 283 mm |
| Weight | : 3.3 kg |
| Format | : S-VHS/VHS NTSC standard |
| Maximum recording time | |
| SP | : 210 min. with ST-210 video cassette |
| EP | : 630 min. with ST-210 video cassette |

### VIDEO/AUDIO

| | |
|---|---|
| Signal system | : NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields |
| Recording/ Playback system | : DA-4 (Double Azimuth) head helical scan system |
| Signal-to-noise ratio | : 45 dB |
| Horizontal resolution | |
| VHS | : 230 lines |
| S-VHS | : 400 lines |
| Frequency range | |
| Normal audio | : 70 Hz to 10,000 Hz |
| Hi-Fi audio | : 20 Hz to 20,000 Hz |
| Input/Output | : RCA connectors (IN x 2, OUT x 1)<br>S-video connectors<br>For HR-S5900U/5910U: (IN x 2, OUT x 1)<br>For HR-S3900U/3910U: (IN x 1, OUT x 1) |

### TUNER

| | |
|---|---|
| Tuning system | : Frequency-synthesized tuner |
| Channel coverage | |
| VHF | : Channels 2–13 |
| UHF | : Channels 14–69 |
| CATV | : 113 Channels |
| RF output | : Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced |

### TIMER

| | |
|---|---|
| Clock reference | : Quartz |
| Program capacity | : 1-year programmable timer/ 8 programs |

Memory backup for timer is not supported.

### ACCESSORIES

| | |
|---|---|
| Provided accessories | : Infrared remote control unit, “AA” battery x 2,<br>S-video cable (4-pin),<br>RF cable (F-type) |

*Specifications shown are for SP mode unless specified otherwise.*
*E. & O.E. Design and specifications subject to change without notice.*

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**March 2001**

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**The following table lists the differing points between Models ( HR-S3900U/U(C), HR-S5900U and HR-S5900U(C) ) in this series.**

| | HR-S3900U/U(C) | HR-S5900U | HR-S5900U(C) |
|---|---|---|---|
| FLYING ERASE HEAD | NOT USED | USED | USED |
| INSERT/OPERATION | NOT USED | USED | USED |
| AUDIO DUBBING/OPERATION | NOT USED | USED | USED |
| REC RESUME | NOT USED | NOT USED | USED |
| FRONT SOVIDEO INPUT TERMINAL | NOT USED | USED | USED |

# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## ● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   **Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape 3) Spacers 5) Barrier
   2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

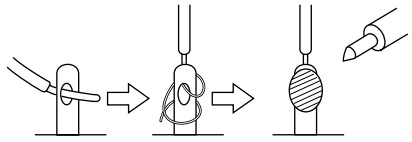


**Fig.1**

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

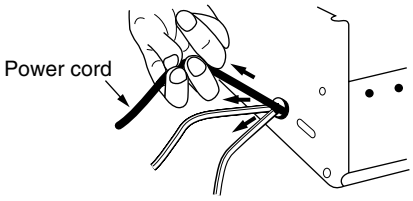



**Fig.2**

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission.
    Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits.
    Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    **1) Connector part number :** E03830-001
    **2) Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.
    **3) Replacement procedure**
    (1) Remove the old connector by cutting the wires at a point close to the connector.
    Important : Do not reuse a connector (discard it).

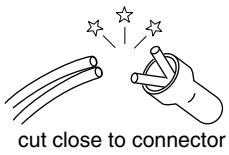



**Fig.3**

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

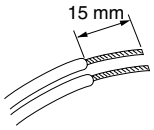



**Fig.4**

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

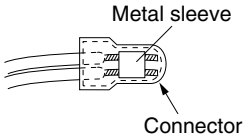



**Fig.5**

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

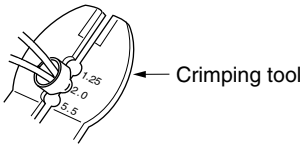



**Fig.6**

(5) Check the four points noted in Fig.7.

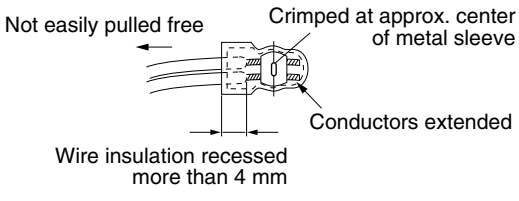

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

**Fig.7**

# ● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

**1. Insulation resistance test**

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

**2. Dielectric strength test**

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

**3. Clearance distance**

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

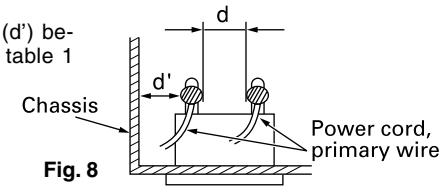



**Fig. 8**

**4. Leakage current test**

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

**Measuring Method :** (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

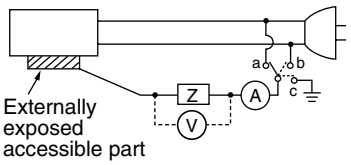



**Fig. 9**

**5. Grounding (Class 1 model only)**

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

**Measuring Method:**

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

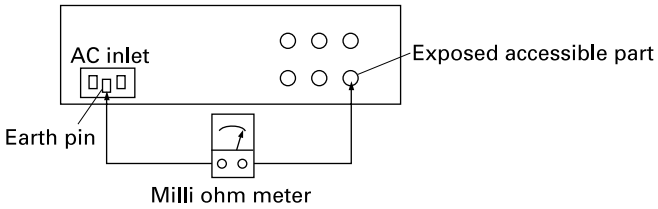



**Fig. 10**

**Grounding Specifications**

| Region | Grounding Impedance (Z) |
|---|---|
| USA & Canada | Z ≦ 0.1 ohm |
| Europe & Australia | Z ≦ 0.5 ohm |

| AC Line Voltage | Region | Insulation Resistance (R) | Dielectric Strength | Clearance Distance (d), (d') |
|---|---|---|---|---|
| 100 V | Japan | R ≧ 1 MΩ/500 V DC | AC 1 kV 1 minute | d, d' ≧ 3 mm |
| 100 to 240 V | | | AC 1.5 kV 1 miute | d, d' ≧ 4 mm |
| 110 to 130 V | USA & Canada | 1 MΩ ≦ R ≦ 12 MΩ/500 V DC | AC 1 kV 1 minute | d, d' ≧ 3.2 mm |
| 110 to 130 V<br>200 to 240 V | Europe & Australia | R ≧ 10 MΩ/500 V DC | AC 3 kV 1 minute (Class Ⅱ)<br>AC 1.5 kV 1 minute (Class Ⅰ) | d ≧ 4 mm<br>d' ≧ 8 mm (Power cord)<br>d' ≧ 6 mm (Primary wire) |

**Table 1** Specifications for each region

| AC Line Voltage | Region | Load Z | Leakage Current (i) | a, b, c |
|---|---|---|---|---|
| 100 V | Japan | 1 kΩ | i ≦ 1 mA rms | Exposed accessible parts |
| 110 to 130 V | USA & Canada | 0.15 μF, 1.5 kΩ | i ≦ 0.5 mA rms | Exposed accessible parts |
| 110 to 130 V<br>220 to 240 V | Europe & Australia | 2 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Antenna earth terminals |
| | | 50 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Other terminals |

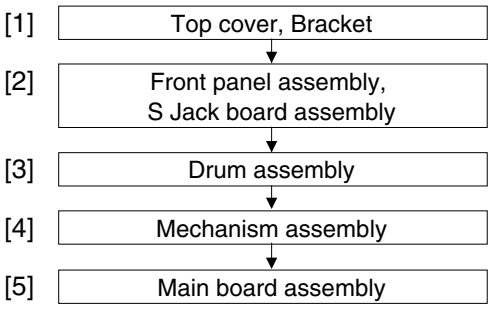
**Table 2** Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

# SECTION 1
# DISASSEMBLY

### 1.1 Disassembly flow chart

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.




### 1.2 How to read the disassembly and assembly

<Example>

| Step/ Loc No. | Part Name | Fig. No. | Point | Note |
|---|---|---|---|---|
| [1] | Top cover,<br><br>Bracket | D1 | 4(S1a),(S1b),3(L1a),<br>2(SD1a),(P1a),(W1a),<br>CN1(WR1a),<br>2(S1c) | <Note 1a> |

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig. No. showing procedure or part location.
(4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.
P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN**(WR**)= Remove the wire (WR**) from the connector (CN**).

**Note:**

- ***The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.***

(5) Adjustment information for installation

### 1.3 Disassembly/assembly method

| Step/ Loc No. | Part Name | Fig. No. | Point | Note |
|---|---|---|---|---|
| [1] | Top cover,<br>Bracket | D1 | 3(S1a)<br>2(S1b) | |
| [2] | Front panel assembly<br><br>S Jack board assembly | D2 | CN7001(WR2a)<br>7(L2a)<br>CN7108(WR2b),<br>2(S2a) | <Note 2a><br><Note 2b><br><Note 2c> |
| [3] | Drum assembly | D3 | CON1(WR3a),<br>CN1(WR3b),<br>(S3a), (W3a),<br>Spacer, (S3b), (S3c) | <Note 2c> |
| [4] | Mechanism assembly | D4 | CN2001(WR4a),<br>(S4a), (S4b),<br>(S4c), (S4d) | <Note 2c><br><Note 4a> |
| [5] | Main board assembly | D5 | (S5a), 7(L5a) | |

**<Note 2a>**

- When reattaching the Front panel assembly, make sure that the door opener “a” of the Cassette holder assembly is lowered in position prior to the reinstallation.

**<Note 2b>**

- When reattaching the Front panel assembly, pay careful attention to the switch lever not to make it touch the switch knob “b” of the Main board assembly from the side.

**<Note 2c>**

- Be careful not to damage the connector and wire etc. during connection and disconnection.
When connecting the wire to the connector, be careful with the wire direction.

**<Note 4a>**

- When it is required to remove the screws (S4a to S4b) retaining the Mechanism assembly, please refer to the “Procedures for Lowering the Cassette holder assembly”(See on page 1-2).
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors and switch on the Main board assembly.

**Procedures for Lowering the Cassette holder assembly**

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

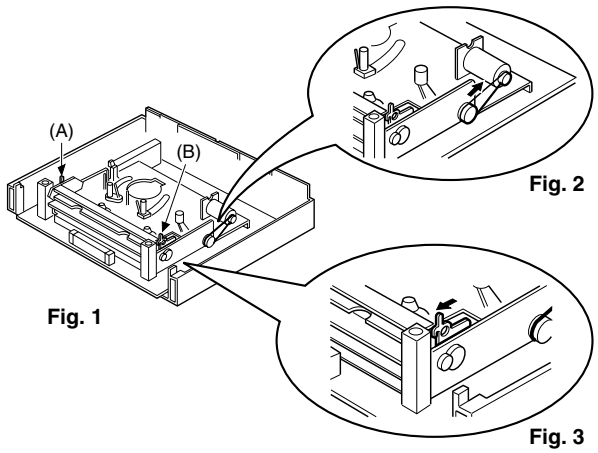



Fig. 1



Fig. 2



Fig. 3

Turn the loading motor pulley in the direction as indicated by Fig.2. As both (A) and (B) levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of (A), (B), (B), (A). When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

Procedures for Lowering the Cassette holder assembly

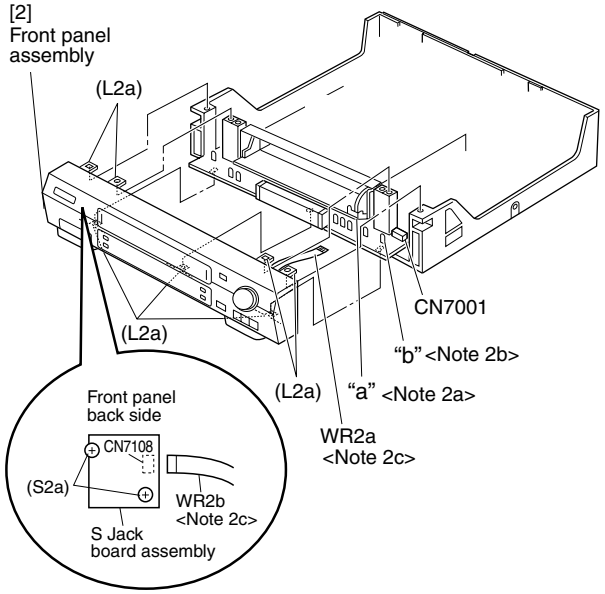



Fig. D2

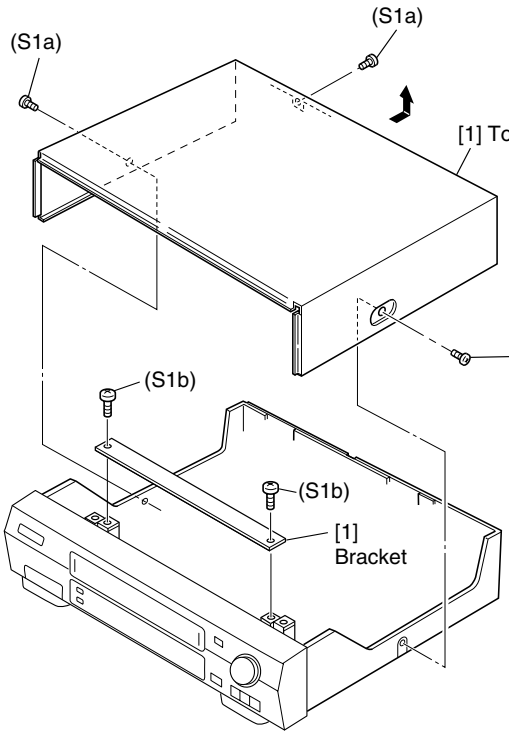



Fig. D1

Note:
When installing the Drum assembly, secure the screws (S3a to S3c) in the order of a, b, c.

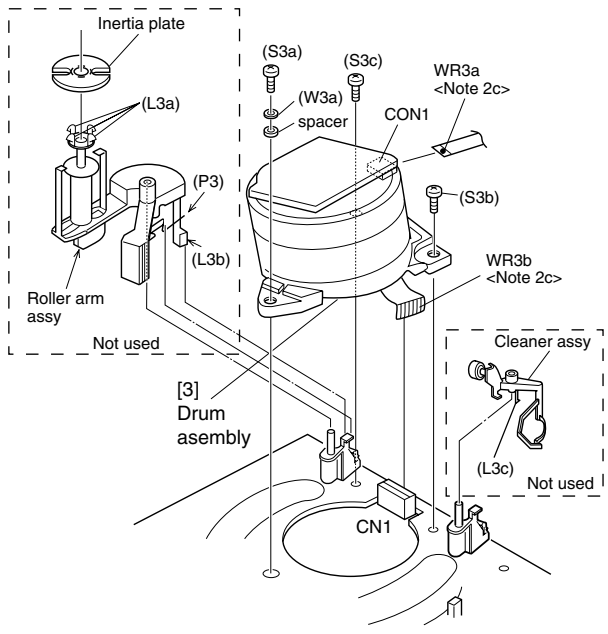



Fig. D3

Note:
When installing the Mechanism assembly, secure the screws (S4a to S4b) in the order of a, b.

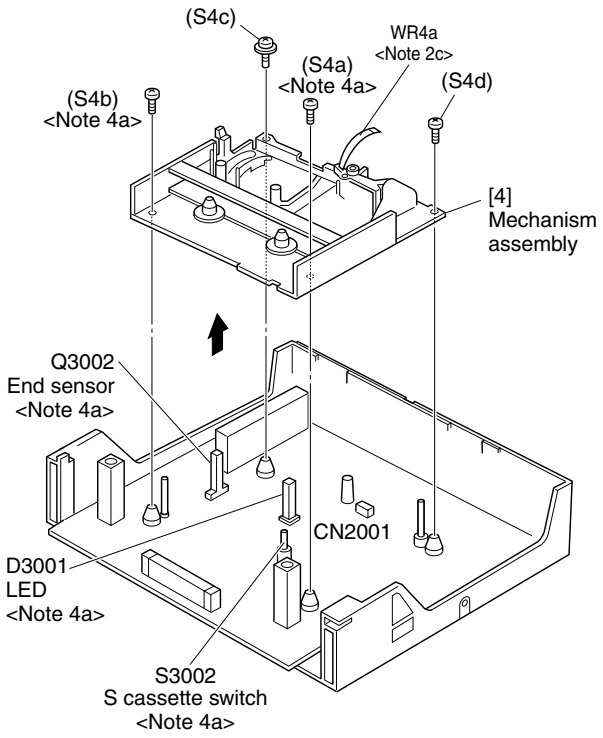



Fig. D4

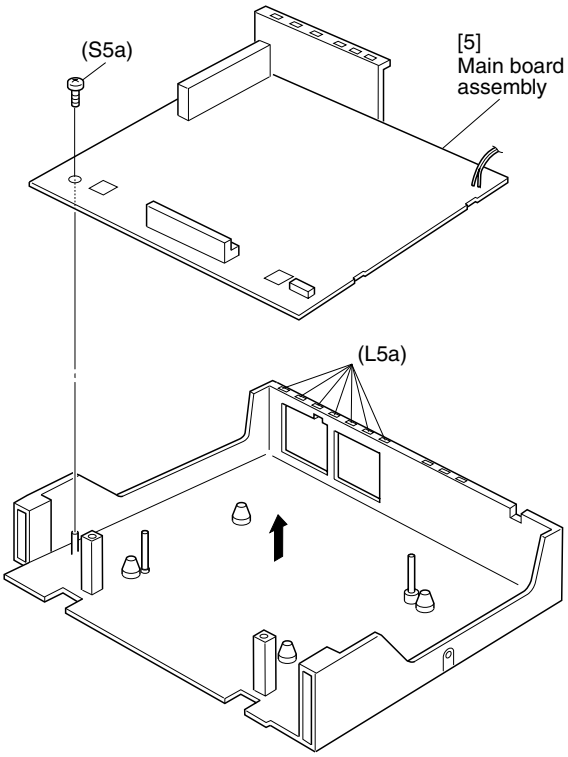



Fig. D5

### 1.4 Service position

This unit has been designed so that the Mechanism and Main board assemblies can be removed together from the chassis assembly. Before diagnosing or servicing the circuit boards, take out the major parts from the chassis assembly.

#### 1.4.1 How to set the "Service position"

(1) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the Drum assembly.
(2) Lower the cassette holder to prepare for the removal of the Mechanism assembly screws. (Refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(3) Remove the combined Mechanism and Main board assemblies.
(4) Connect the wires and connectors of the major parts that have been removed in step (1). (Refer to Fig.1-4-1a.)
(5) Place the combined Mechanism and Main board assemblies upside down.
(6) Insert the power cord plug into the power outlet and then proceed with the diagnostics and servicing of the board assembly.

**Notes:**

- ***Before inserting the power cord plug into the power outlet, make sure that none of the electrical parts are able to short-circuit between the workbench and the board assembly.***
- ***For the disassembly procedure of the major parts and details of the precautions to be taken, see "1.3 Disassembly/assembly method".***
- ***If there are wire connections from the Main board and Mechanism assemblies to the other major parts, be sure to remove them ( including wires connected to the major parts ) first before performing step (2).***
- ***When carrying out diagnosis and repair of the Main board assembly in the "Service position", be sure to ground both the Main board and Mechanism assemblies. If they are improperly grounded, there may be noise on the playback picture or FDP counter display may move even when the mechanism is kept in an inoperative status.***
- ***In order to diagnose the playback or recording of the cassette tape, set the Mechanism assembly to the required mode before placing it upside down. If the mechanism mode is changed (including ejection) while it is in an upside down position the tape inside may be damaged.***
- ***The mechanism and board assemblies of this unit are attached by connectors only.***
  ***When carrying out a diagnosis or repair of the boards in the "Service position", make sure that the connectors are not disconnected.***

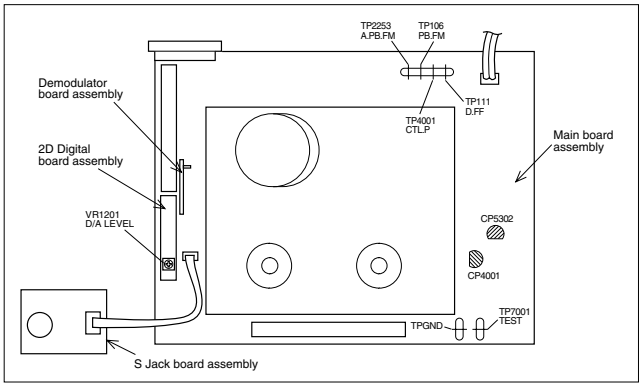



Fig. 1-4-1a

### 1.5 Mechanism service mode

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "Mechanism service mode".

#### 1.5.1 How to set the "Mechanism service mode"

(1) Unplug the power cord plug from the power outlet.
(2) Connect TPGND and TP7001(TEST) on the Main board assembly with a jump wire.
(3) Insert the power cord plug into the power outlet.
(4) With lock levers (A) (B) on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers (A) (B), refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(5) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

### 1.6 Jig RCU mode

This unit uses the following two modes for receiving remote control codes.

1) User RCU mode : Ordinary mode for use by the user.
2) Jig RCU mode : Mode for use in production and servicing.

When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). As both of the above two modes are stored in the EEPROM, it is required to set the VCR back to the User RCU mode each time that an adjustment is made or to check that the necessary operations have been completed. These modes can be set by the operations described below.

#### 1.6.1 Setting the Jig RCU mode

(1) Unplug the power cord plug from the power outlet.
(2) Press and hold the "REC" and "PAUSE" buttons on the VCR simultaneously, while plugging the power cord plug into the power outlet.
  When the VCR is set to the Jig RCU mode, the symbols ( " : " ) in the time display of the FDP are turned off.

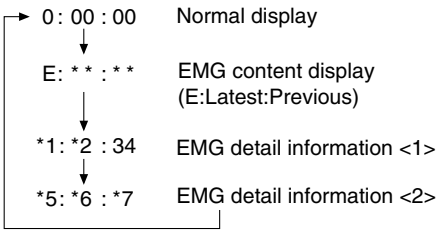
#### 1.6.2 Setting the User RCU mode

(1) Turn off the power.
(2) Press the "REC" and "PAUSE" buttons of the VCR simultaneously. Alternatively, transmit the code "80" from the Jig RCU.

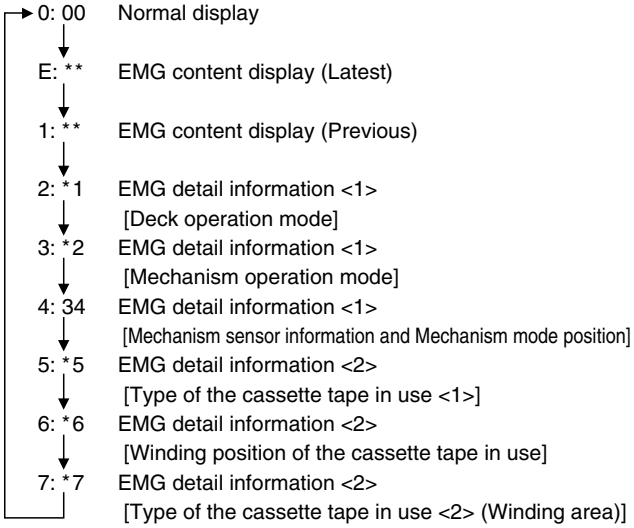
### 1.7 Emergency display function

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP (or OSD). With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

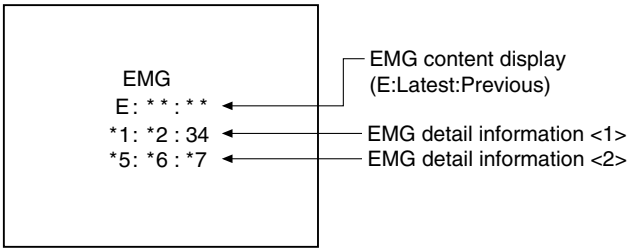
**FDP display model**
**[FDP display]**




**FDP (7segment LED) display model**
**[FDP display]**




**OSD display model**
**[OSD display]**




**Notes:**

- ***The EMG detail information <1><2> show the information on the latest EMG.***
  ***It becomes " – – : – – : – –" when there is no latest EMG record.***
- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).***

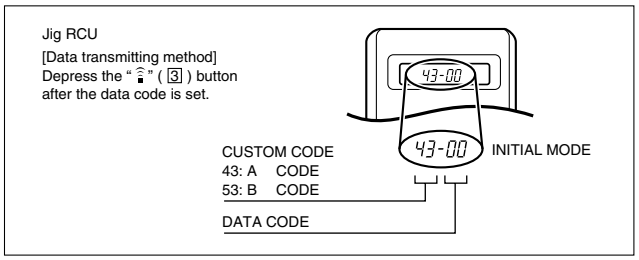



Fig. 1-7a Jig RCU [PTU94023B]

#### 1.7.1 Displaying the EMG information

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the EMG content in the form of "E: * * : * * ".

<Example 1> E : 01 : 03
Previous EMG
Latest EMG

<Example 2> E : – – : – – ← No EMG record

(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the EMG detail information <1> in the form of " *1 : *2 : 34 ".

- *1 : Deck operation mode at the moment of EMG
- *2 : Mechanism operation mode at the moment of EMG
- 3– : Mechanism sensor information at the moment of EMG
- –4 : Mechanism mode position at the moment of EMG

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the EMG detail information <2> in the form of " *5 : *6 : *7 ".

- *5 : Type of the cassette tape in use <1> .
- *6 : Winding position of the cassette tape in use
- *7 : Type of the cassette tape in use <2> (Winding area)

(4) Transmit the code "59" from the Jig RCU once again to reset the display.

**Notes:**

- ***For the OSD display model, all EMG information are showed by transmitting first code from the Jig RCU.***
- ***For the EMG content, see "1.7.3 EMG content description".***
- ***For the EMG detail information <1> , see "1.7.4 EMG detail information <1> ".***
- ***For the EMG detail information <2> , see "1.7.5 EMG detail information <2>".***

#### 1.7.2 Clearing the EMG history

(1) Display the EMG history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the EMG display.

(EMG-02e)

### 1.7.3 EMG content description

**Note:** ***EMG contents "E08/E09" are for the model with Dynamic Drum (DD).***

| FDP | CONTENT | CAUSE |
|---|---|---|
| E01: Loading EMG | When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off. | 1. The mechanism is locked in the middle of mode transition.<br>2. The mechanism is locked at the loading end due to the encoder position reading error during mode transition.<br>3. Power is not supplied to the loading MDA. |
| E02: Unloading EMG | When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off. | 1. The mechanism is locked in the middle of mode transition.<br>2. The mechanism is locked at the unloading end due to the encoder position reading error during mode transition.<br>3. Power is not supplied to the loading MDA. |
| E03: Take Up Reel Pulse EMG | When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes. | 1. The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because;<br>1) The idler gear is not meshed with the take-up reel gear;<br>2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension);<br>3) The take-up reel sensor does not output the FG pulse.<br>2. The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because;<br>1) The idler gear is not meshed with the supply reel gear.<br>2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension);<br>3) The supply reel sensor does not output the FG pulse.<br>3. Power is not supplied to the reel sensors. |
| E04: Drum FG EMG | When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off. | 1. The drum could not start or the drum rotation has stopped due to too large a load on the tape, because;<br>1) The tape tension is abnormally high;<br>2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape.<br>2. The drum FG pulse did not reach the System controller CPU because;<br>1) The signal circuit is disconnected in the middle;<br>2) The FG pulse generator (hall device) of the drum is faulty.<br>3. The drum control voltage (DRUM CTL V) is not supplied to the MDA.<br>4. Power is not supplied to the drum MDA. |
| E05: Cassette Eject EMG | When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately. | 1. The cassette cannot be ejected due to a failure in the drive mechanism of the housing.<br>2. When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque.<br>Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure.<br>3. The sensor/switch for detecting the end of ejection are not functioning normally.<br>4. The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA).<br>5. When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing. |
| E06: Capstan FG EMG | When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes. | 1. The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because;<br>1) The tape tension is abnormally high (mechanical lock);<br>2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.).<br>2. The capstan FG pulse did not reach the System controller CPU because;<br>1) The signal circuit is disconnected in the middle;<br>2) The FG pulse generator (MR device) of the capstans is faulty.<br>3. The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA.<br>4. Power is not supplied to the capstan MDA. |
| E07: SW Power Short-Circuit EMG | When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off. | 1. The SW 5 V power supply circuit is shorted with GND.<br>2. The SW 12 V power supply circuit is shorted with GND. |
| E08: DD Initialized (Absolute Position Sensor) EMG | When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off. | 1. The absolute value sensor is defective. (The soldered parts have separated.)<br>2. The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.)<br>3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor.<br>4. The absolute value sensor data is not sent to the System Controller CPU. |
| E09: DD FG EMG | When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off. | 1. The FG sensor is defective. (The soldered parts have separated.)<br>2. The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.)<br>3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor.<br>4. The power to the sensor is not supplied. (Connection failure/soldering failure)<br>5. The FG pulse is not sent to the System Controller CPU.<br>6. The tilt motor is defective. (The soldered parts have separated.)<br>7. The drive power to the tilt motor is not supplied. (Connection failure/soldering failure)<br>8. The tilt motor drive MDA - IC is defective.<br>9. Auto-recovery of the DD tilting cannot take place due to overrun. |
| E0A: Supply Reel Pulse EMG | When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode. | 1. The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because;<br>1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle;<br>2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then;<br>3) The FG pulse output from the supply reel sensor is absent.<br>2. The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.).<br>1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle;<br>2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time;<br>3) The FG pulse output from the take-up reel sensor is absent.<br>3. The power to a reel sensor is not supplied. |
| EC1 or EU1: Head clog warning | Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:C1] or [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately.<br>EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette."<br>The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY. | |

Table 1-7-3a

### 1.7.4 EMG detail information <1>

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest EMG can be confirmed based on the figure in EMG detail information <1> .

**[FDP/OSD display]**

*1 : *2 : 34

*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3– : Mechanism sensor information at the moment of EMG
–4 : Mechanism mode position at the moment of EMG

**Note:**

- ***For EMG detailed information <1>, the content of the code that is shown on the FDP (or OSD) differs depending on the parts number of the system control microprocessor (IC3001) of the VCR. The system control microprocessor parts number starts with two letters, refer these to the corresponding table.***

***1 : Deck operation mode**
**[Common table of MN*, HD* and M3*]**

| Display | | Deck operation mode |
|---|---|---|
| MN*/M3* | HD* | |
| 00 | - | Mechanism being initialized |
| 01 | 00 | STOP with pinch roller pressure off (or tape present with P.OFF) |
| 02 | 01 | STOP with pinch roller pressure on |
| 03 | - | POWER OFF as a result of EMG |
| 04 | 04 | PLAY |
| 0C | 0E | REC |
| 10 | 11 | Cassette ejected |
| 20 | 22 | FF |
| 21 | - | Tape fully loaded, START sensor ON, short FF |
| 22 | - | Cassette identification FWD SEARCH before transition to FF (SP x7-speed) |
| 24 | 26 | FWD SEARCH (variable speed) including x2-speed |
| 2C | 2E | INSERT REC |
| 40 | 43 | REW |
| 42 | - | Cassette identification REV SEARCH before transition to REW (SP x7-speed) |
| 44 | 47 | REV SEARCH (variable speed) |
| 4C | 4C | AUDIO DUB |
| 6C | 6E | INSERT REC (VIDEO + AUDIO) |
| 84 | 84 | FWD STILL / SLOW |
| 85 | 85 | REV STILL / SLOW |
| 8C | 8F | REC PAUSE |
| 8D | - | Back spacing |
| 8E | - | Forward spacing (FWD transport mode with BEST function) |
| AC | AF | INSERT REC PAUSE |
| AD | - | INSERT REC back spacing |
| CC | CD | AUDIO DUB PAUSE |
| CD | - | AUDIO DUB back spacing |
| EC | EF | INSERT REC (VIDEO + AUDIO) PAUSE |
| ED | - | INSERT REC (VIDEO + AUDIO) back spacing |

***2 : Mechanism operation mode**
**[Common table of MN* and M3*]**

| Display | | Mechanism operation mode |
|---|---|---|
| MN* | M3* | |
| 00 | 00 | Command standby (Status without executing command) |
| 02 | 02 | POWER OFF by EMG occurrence |
| 04 | 04 | Moving to the adjacent position in the LOAD direction |
| 06 | 06 | Moving to the adjacent position in the UNLOAD direction |
| 08 | 08 | Cassette ejection being executed / Cassette housing ejection being executed |
| - | 0A | Mode transition to STOP with cassette ejection end |
| 0A | 0C | Cassette insertion being executed |
| 0C | 0E | Tape being loaded |
| 0E | 10 | Tape being unloaded |
| 10 | 12 | Mode transition to STOP with pinch roller compression ON |
| 12 | 14 | Mode transition to STOP with pinch roller compression OFF |
| 14 | 16 | Mode transition to STOP with pinch roller compression OFF as a result of POWER OFF |
| 16 | 18 | Mode transition to STOP with pinch roller compression ON as a result of POWER ON |
| 18 | 1A | Mode transition to PLAY |
| 1A | 1C | Mode transition to FWD SEARCH |
| 1C | 1E | Mode transition to REC |
| 1E | 20 | Mode transition to FWD STILL / SLOW |
| 20 | 22 | Mode transition to REV STILL / SLOW |
| 22 | 24 | Mode transition to REV SEARCH |
| 24 | 26 | Mode transition from FF / REW to STOP |
| 26 | 28 | Mode transition to FF |
| 28 | 2A | Mode transition to REW |
| 2A | 2C | 4 sec. of REV as a result of END sensor going ON during loading |
| 2C | 2E | Short FF / REV as a result of END sensor going ON during unloading |
| 2E | 30 | Mechanism position being corrected due to overrun |
| 80 | 80 | Mechanism in initial position (Dummy command) |

**[Table of HD*]**

| Display | Mechanism operation mode |
|---|---|
| 00 | STOP with pinch roller pressure off |
| 01 | STOP with pinch roller pressure on |
| 02 | U/L STOP (or tape being loaded) |
| 04 | PLAY |
| 05 | PLAY (x1-speed playback using JOG) |
| 0E | REC |
| 11 | Cassette ejected |
| 22 | FF |
| 26 | FWD SEARCH (variable speed) including x2-speed |
| 2E | INSERT REC |
| 43 | REW |
| 47 | REV SEARCH |
| 4C | AUDIO DUB |
| 6E | INSERT REC (VIDEO + AUDIO) |
| 84 | FWD STILL/SLOW |
| 85 | REV STILL/SLOW |
| 8F | REC PAUSE |
| AF | INSERT REC PAUSE |
| C7 | REV SEARCH (x1-speed reverse playback using JOG) |
| CD | AUDIO DUB PAUSE |
| EF | INSERT REC (VIDEO + AUDIO) PAUSE |
| F0 | Mechanism being initialized |
| F1 | POWER OFF as a result of EMG |
| F2 | Cassette being inserted |
| F3 | Cassette being ejected |
| F4 | Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off |
| F5 | Transition from STOP with pinch roller pressure on to PLAY |
| F6 | Transition from STOP with pinch roller pressure on to REC |
| F7 | Cassette type detection SEARCH before FF/REW is being executed |
| F8 | Tape being unloaded |
| F9 | Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on |
| FA | Transition from STOP with pinch roller pressure off to FF/REW |
| FB | Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.) |
| FC | Transition from STOP with pinch roller pressure off to cassette type detection SEARCH |
| FD | Short REV being executed after END sensor on during unloading |
| FE | Tension loosening being executed after tape loading (STOP with pinch roller pressure on) |

**3– : Mechanism sensor information**
**[Common table of MN*, HD* and M3*]**

| Display | Mechanism sensor information | | | | |
|---|---|---|---|---|---|
| | MN* / HD* S-VHS SW | M3* CASS SW | REC safety SW | Start sensor | End sensor |
| 0- | VHS | Cassette insertion | Tab broken | ON | ON |
| 1- | VHS | Cassette insertion | Tab broken | ON | OFF |
| 2- | VHS | Cassette insertion | Tab broken | OFF | ON |
| 3- | VHS | Cassette insertion | Tab broken | OFF | OFF |
| 4- | VHS | Cassette insertion | Tab present | ON | ON |
| 5- | VHS | Cassette insertion | Tab present | ON | OFF |
| 6- | VHS | Cassette insertion | Tab present | OFF | ON |
| 7- | VHS | Cassette insertion | Tab present | OFF | OFF |
| 8- | S-VHS | Cassette ejection | Tab broken | ON | ON |
| 9- | S-VHS | Cassette ejection | Tab broken | ON | OFF |
| A- | S-VHS | Cassette ejection | Tab broken | OFF | ON |
| B- | S-VHS | Cassette ejection | Tab broken | OFF | OFF |
| C- | S-VHS | Cassette ejection | Tab present | ON | ON |
| D- | S-VHS | Cassette ejection | Tab present | ON | OFF |
| E- | S-VHS | Cassette ejection | Tab present | OFF | ON |
| F- | S-VHS | Cassette ejection | Tab present | OFF | OFF |

**–4 : Mechanism mode position**
**[Common table of MN*, HD* and M3*]**

| Display | | | Mechanism mode position |
|---|---|---|---|
| MN* | HD* | M3* | |
| -0 | -7 | - | Initial value |
| -1 | -0 | - | EJECT position |
| - | - | -0 | EJECT position (Cassette housing drive mode) |
| -2 | -7 | - | Housing operating |
| - | - | -1 | Between EJECT and U / L STOP |
| -3 | -1 | -2 | U / L STOP position |
| - | - | -3 | Guide arm drive position |
| -4 | -7 | -4 | Tape being loaded / unloaded (When the pole base is located on the front side of the position just beside the drum) |
| -5 | -2 | -5 | Tape being loaded / unloaded (When the pole base is located on the rear side of the position just beside the drum) |
| -6 | -7 | -6 | Pole base compressed position |
| -7 | -3 | -F | FF / REW position |
| -8 | -7 | -F | Between FF / REW and STOP with pinch roller compression ON |
| -9 | -4 | -F | STOP with pinch roller compression OFF |
| -A | -7 | -E | Between STOP with pinch roller compression OFF and REV |
| -B | -5 | - | REV (REV STILL / SLOW) position |
| - | - | -D | REV position |
| - | - | -C | Between REV and REV STILL / SLOW |
| - | - | -B | REV STILL / SLOW position |
| -C | -7 | - | Between REV and FWD |
| - | - | -A | Between REV STILL / SLOW and FWD STILL / SLOW |
| -D | -6 | - | FWD (FWD STILL / SLOW) position |
| - | - | -9 | FWD STILL / SLOW position |
| -E | -7 | - | Between FWD and PLAY |
| - | - | -8 | Between FWD STILL / SLOW and PLAY |
| -F | -6 | -7 | PLAY position |

**Note:**
- ***In the case of the "HD*" microprocessor, as the display is always "-7" at any intermediate position between modes, the position of transitory EMG may sometimes not be located.***

### 1.7.5 EMG detail information <2>

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information <2> .

**[FDP/OSD display]**

*5 : *6 : *7

*5 : Type of the cassette tape in use <1>
*6 : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use <2> (Winding area)

**Note:**
- ***EMG detail information <2> is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.***

***5 : Cassette tape type <1>**

| Display | Cassette tape type <1> |
|---|---|
| 00 | Cassette type not identified |
| 16 | Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified |
| 82 | Small reel, thick tape (T-120) identified/thin tape (T-140) identified |
| 84 | Large reel (T-0 to T-60) identified |
| 92 | Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified |
| 93 | Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified |
| C3 | Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified |
| D3 | Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified |
| E1 | C cassette, thick tape (TC-10 to TC-20) identified |
| E2 | Small reel, thick tape (T-0 to T-100) identified |
| E9 | C cassette, thin tape (TC-30 to TC-40) identified |
| F1 | C cassette, thick tape/thin tape (TC-10 to TC-40) not classified |

**Notes:**
- ***Cassette tape type <1> is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.***
- ***If other value than those listed in the above table is displayed, the cassette tape type is not identified.***

***6 : Cassette tape winding position**

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from “00” to “15”.

“00” : End of winding
“15” : Beginning of winding
“FF or ––” : Tape position not identified

***7 : Cassette tape type <2> (Winding area)**

| Display | Cassette tape type <2> | |
|---|---|---|
| 00 | Cassette type not identified | |
| 07 | Small reel, thick tape | T-5 |
| 08 - 0E | C cassette, thick tape | TC-10 |
| 09 - 15 | C cassette, thick tape | TC-20P |
| 0A - 0B | Small reel, thick tape | T-20 |
| 0A - 16 | C cassette, thin tape | TC-30 |
| 0A - 16 | C cassette, thin tape | TC-40 |
| 0D - 0F | Small reel, thick tape | T-40 |
| 11 - 14 | Small reel, thick tape | T-60 |
| 15 - 18 | Small reel, thick tape | T-80 / DF-160 |
| 17 - 1A | Small reel, thick tape | T-90 / DF-180 |
| 19 - 1D | Small reel, thick tape | T-100 |
| 1D - 21 | Small reel, thick tape | T-120 / DF-240 |
| 1E - 1F | Small reel, thin tape | T-140 |
| 1F - 23 | Small reel, thick tape | T-130 |
| 21 - 23 | Small reel, thin tape | T-160 |
| 21 - 23 | Small reel, thin tape | T-168 |
| 22 - 24 | Small reel, thick tape | DF-300 |
| 22 - 24 | Small reel, thin tape | T-180 / DF-360 |
| 22 - 24 | Small reel, thin tape | T-210 / DF-420 |
| 22 - 23 | Large reel | T-5 |
| 23 - 24 | Large reel | T-10 |
| 25 - 26 | Large reel | T-20 |
| 27 - 29 | Large reel | T-30 |
| 29 - 2B | Large reel | T-40 |
| 2D - 2F | Large reel | T-60 |

**Note:**
- ***The values of cassette tape type <2> in the above table are typical values with representative cassette tapes.***

# SECTION 2
# MECHANISM ADJUSTMENT

## 2.1 Before starting repair and adjustment

### 2.1.1 Precautions

(1) Unplug the power cord plug of the VCR before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When reattaching the front panel assembly, make sure that the door opener of the cassette holder assembly is lowered in position prior to the reinstallation. (See SECTION 1 DISASSEMBLY.)
(6) When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)

### 2.1.2 Checking for proper mechanical operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See SECTION 1 DISASSEMBLY.)

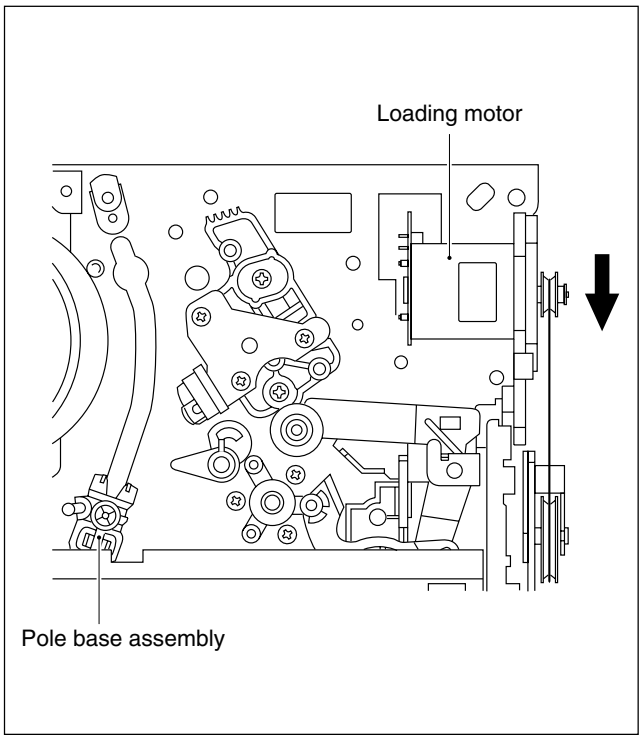



Fig. 2-1-3a

### 2.1.3 Manually removing the cassette tape

**1. In case of electrical failures**

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cord plug from the power outlet.
(2) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the drum assembly.
(3) Unload the pole base assembly by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-3a.)
(4) Bring the pole base assembly to a pause when it reaches the position where it is hidden behind the cassette tape.
(5) Move the top guide toward the drum while holding down the lug (A) of the bracket retaining the top guide. Likewise hold part (B) down and remove the top guide.
Section (C) of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-3b.)
(6) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(7) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

**Note:**

- ***For the disassembly procedure of the major parts and details of the precautions to be taken, see "SECTION 1 DISASSEMBLY".***

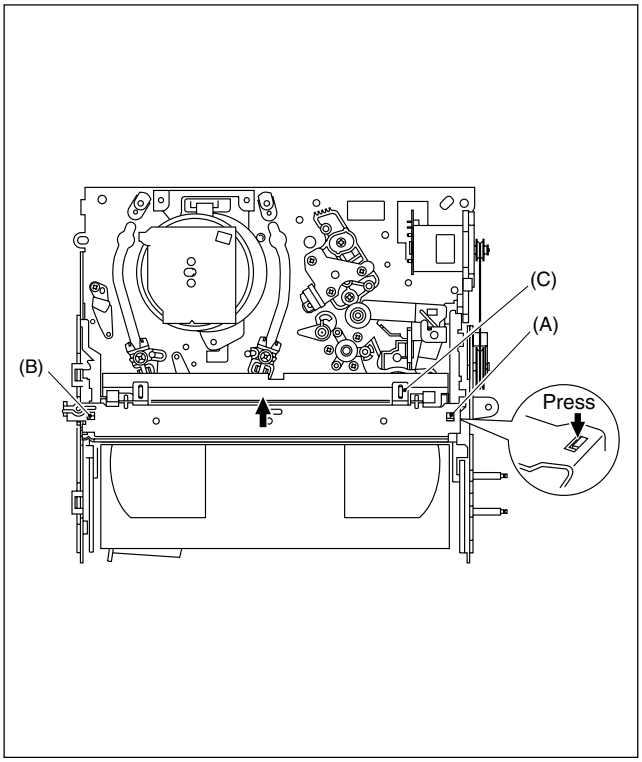



Fig. 2-1-3b

**2. In case of mechanical failure**

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See SECTION 1 DASASSEMBLY.)
(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3c.)
(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-3d.)
(4) In the same way as in the electrical failure instructions in 2.1.3-1(5), remove the top guide.
(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.
(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

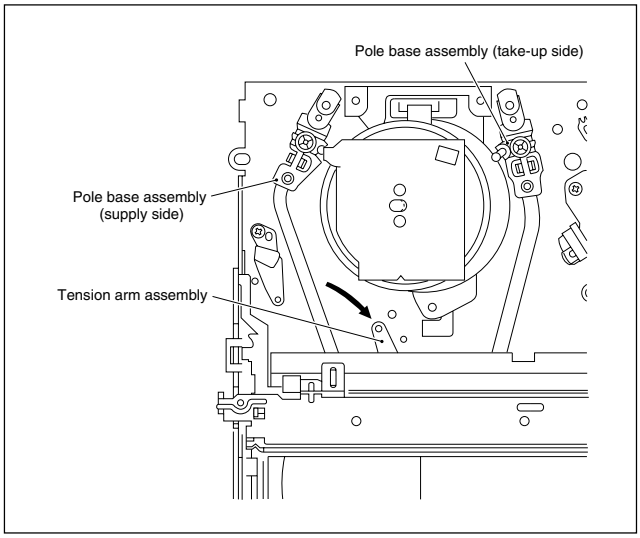



Fig. 2-1-3c

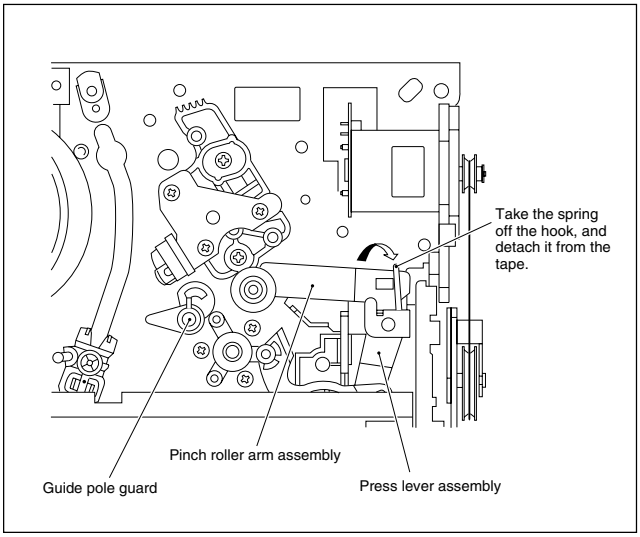
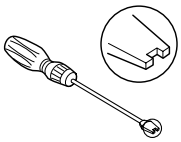
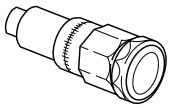
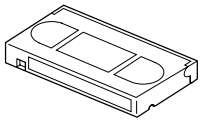
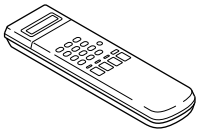
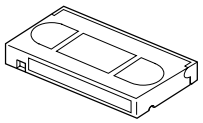
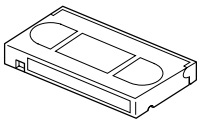



Fig. 2-1-3d

### 2.1.4 Jigs and tools required for adjustment

| | | |
|---|---|---|
| Roller driver<br>PTU94002 | A/C head positioning tool<br>PTU94010 | Torque gauge<br>PUJ48075-2 |
|  | |  |
| Back tension cassette gauge<br>PUJ48076-2 | Jig RCU<br>PTU94023B | |
|  |  | |
| Alignment tape<br>(SP, stairstep, NTSC)<br>MHP | Alignment tape<br>(EP, stairstep, NTSC)<br>MHP-L | |
|  |  | |

### 2.1.5 Maintenance and inspection

**1. Location of major mechanical parts**

In this chapter, the two mechanism speeds are described by comparing the speeds of the standard type and the high-speed FF/REW type.
It is possible to distinguish between these two types of mechanism by the diameters of their capstan pulleys.
The capstan pulley diameter for the standard type is approx. 32 mm.
The capstan pulley diameter for the high-speed FF/REW type is approx. 43 mm.
For information on the different parts used in the two mechanism types, please refer to the “Replacement of major parts”.

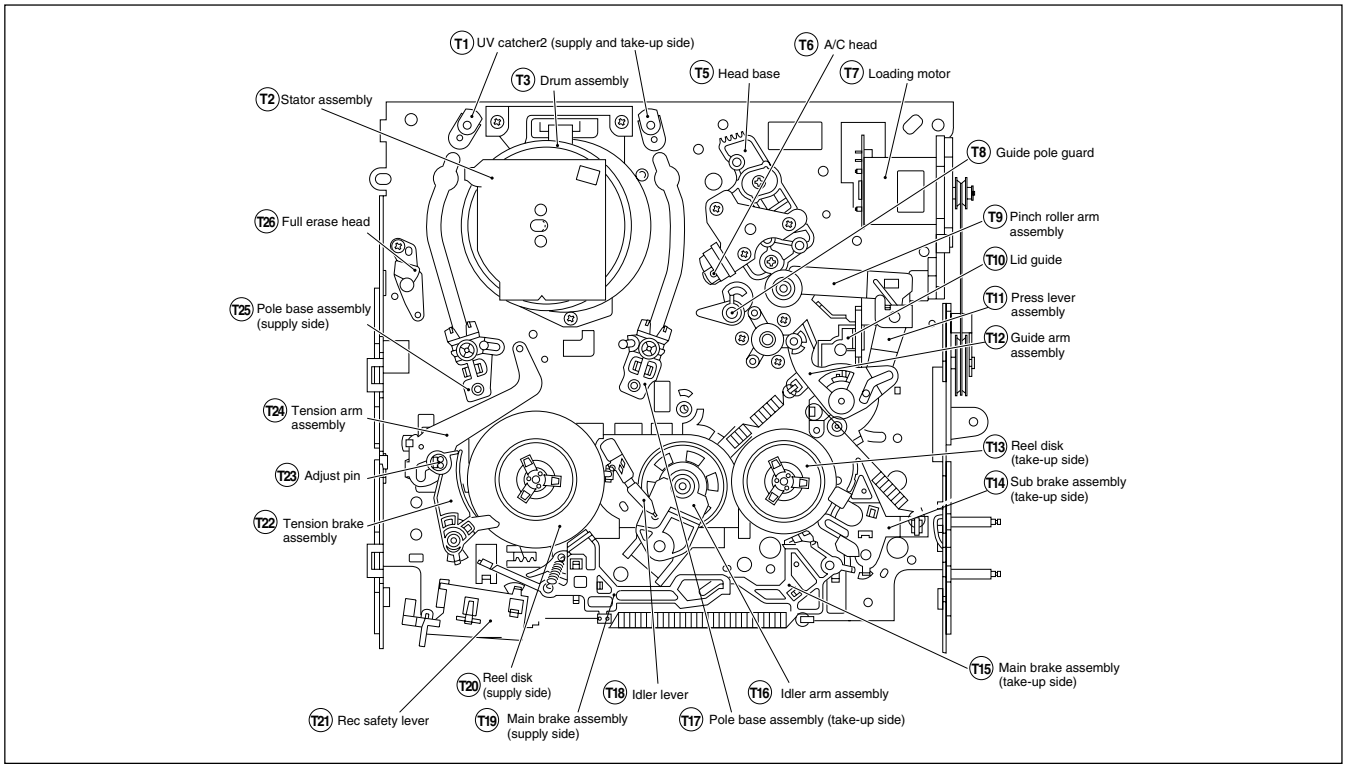

T1 UV catcher2 (supply and take-up side)
T2 Stator assembly
T3 Drum assembly
T5 Head base
T6 A/C head
T7 Loading motor
T8 Guide pole guard
T9 Pinch roller arm assembly
T10 Lid guide
T11 Press lever assembly
T12 Guide arm assembly
T13 Reel disk (take-up side)
T14 Sub brake assembly (take-up side)
T15 Main brake assembly (take-up side)
T16 Idler arm assembly
T17 Pole base assembly (take-up side)
T18 Idler lever
T19 Main brake assembly (supply side)
T20 Reel disk (supply side)
T21 Rec safety lever
T22 Tension brake assembly
T23 Adjust pin
T24 Tension arm assembly
T25 Pole base assembly (supply side)
T26 Full erase head

Fig. 2-1-5a Mechanism assembly top side

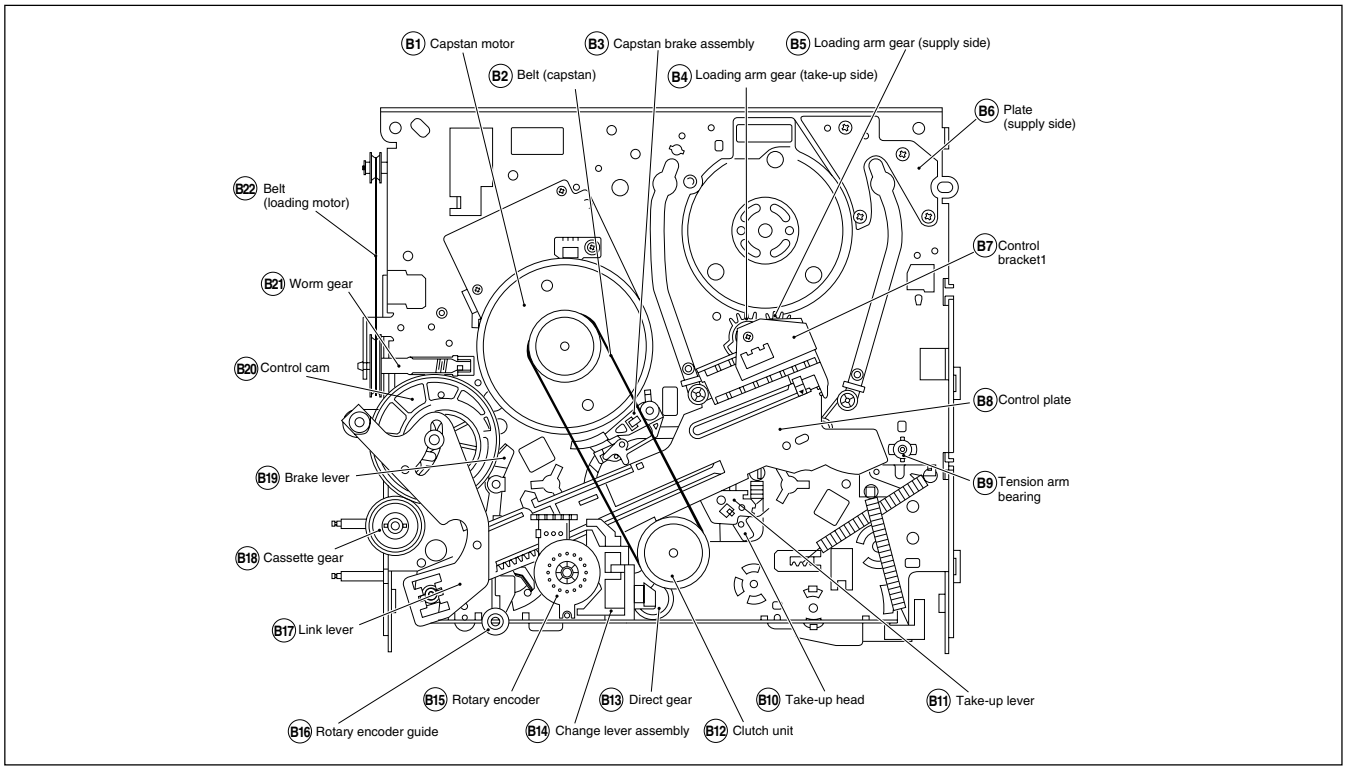



Fig. 2-1-5b Mechanism assembly bottom side

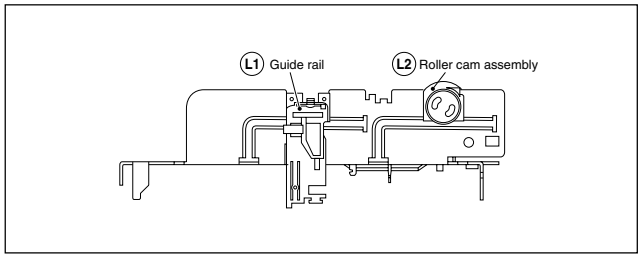



Fig. 2-1-5c Mechanism assembly left side

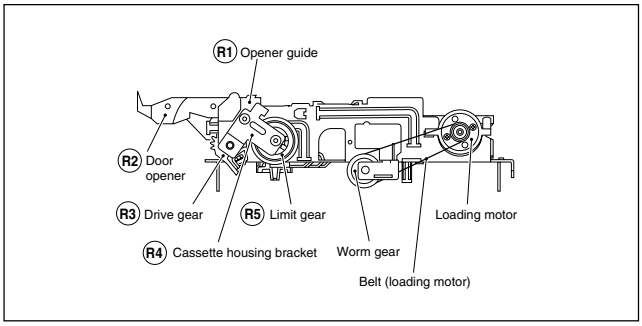



Fig. 2-1-5d Mechanism assembly right side

**2. Cleaning**

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

**Note:**

- ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

**3. Lubrication**

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

**Note:**

- ***See the "mechanism assembly" diagram of the parts list for the lubricating or greasing spots, and for the types of oil or grease to be used.***

**4. Suggested servicing schedule for main components**

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

| System | Parts Name | Operation Hours | |
|---|---|---|---|
| | | ~1000H | ~2000H |
| Tape transport | Upper drum assembly | ★○ | ○ |
| | A/C head | ★○ | ★○ |
| | Lower drum assembly | ★ | ★○ |
| | Pinch roller arm assembly | ★ | ★ |
| | Full erase head | ★ | ★ |
| | Tension arm assembly | ★ | ★ |
| | Capstan motor (Shaft) | ★ | ★ |
| | Guide arm assembly | ★ | ★ |
| Drive | Capstan motor | | ○ |
| | Capstan brake assembly | | ○ |
| | Main brake assembly | | ○ |
| | Belt (Capstan) | ○ | ○ |
| | Belt (Loading motor) | | ○ |
| | Loading motor | | ○ |
| | Clutch unit | | ○ |
| | Worm gear | | ○ |
| | Control plate | | ○ |
| Other | Brush | ★○ | ★○ |
| | Tension brake assembly | ○ | ○ |
| | Rotary encoder | | ○ |

★ : Cleaning

○ : Inspection or replacement if necessary

Table 2-1-5a

**5. Disassembling procedure table**

The following table indicates the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.

The symbols and numbers preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "T/B" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

| Symbols and numbers | Removal parts / (Reference items) Replacement parts | Front (T)/Back (B) of mechanism | Number of removal steps | L1 Guide rail | L2 Roller cam assembly | R4 Cassette housing bracket | R1 Opener guide | — Relay gear | — Cassette holder assembly | R3 Drive gear | — Drive arm | T9 Pinch roller arm assembly | T12 Guide arm assembly | T11 Press lever assembly | T1 UV catcher2 | B15 Rotary encoder | B12 Clutch unit | B14 Change lever assembly | B13 Direct gear | — Coupling gear | B17 Link lever | B21 Worm gear | B7 Control bracket1 | B8 Control plate | B5 Loading arm gear (supply side) | B4 Loading arm gear (take-up side) | B11 Take-up lever | T14 Sub brake assembly (take-up side) | T15 Main brake assembly (take-up side) | T13 Reel disk (take-up side) | T22 Tension brake assembly | T24 Tension arm assembly | T18 Idler lever | B19 Brake lever (*1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 2.2.3 Guide rail | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L2 | 2.2.3 Roller cam assembly | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R4 | 2.2.3 Cassette housing bracket | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R1 | 2.2.3 Opener guide | T | 2 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R2 | 2.2.3 Door opener | T | 3 | | | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | 2.2.3 Relay gear | T | 3 | | | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R5 | 2.2.3 Limit gear | T | 3 | | | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | 2.2.3 Cassette holder assembly | T | 6 | 1 | 2 | 3 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R3 | 2.2.3 Drive gear | T | 4 | | | 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | 2.2.3 Drive arm | T | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | | | | | | | | | | | | |
| T9 | 2.2.4 Pinch roller arm assembly | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T12 | 2.2.5 Guide arm assembly | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T11 | 2.2.5 Press lever assembly | T | 3 | | | | | | | | | 1 | 2 | | | | | | | | | | | | | | | | | | | | | |
| T6 | 2.2.6 A/C head | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T7 | 2.2.7 Loading motor | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B1 | 2.2.8 Capstan motor | T/B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T1 | 2.2.9 UV catcher2 | T | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T17 | 2.2.9 Pole base assembly (take-up side) | T/B | 2 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| T25 | 2.2.9 Pole base assembly (supply side) | T/B | 2 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| B15 | 2.2.10 Rotary encoder | B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B12 | 2.2.11 Clutch unit | B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B14 | 2.2.12 Change lever assembly | B | 3 | | | | | | | | | | | | | 1 | 2 | | | | | | | | | | | | | | | | | |
| B13 | 2.2.12 Direct gear | B | 4 | | | | | | | | | | | | | 1 | 2 | 3 | | | | | | | | | | | | | | | | |
| — | 2.2.12 Coupling gear | B | 5 | | | | | | | | | | | | | 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | |
| — | 2.2.12 Clutch gear | B | 6 | | | | | | | | | | | | | 1 | 2 | 3 | 4 | 5 | | | | | | | | | | | | | | |
| B17 | 2.2.13 Link lever | B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B18 | 2.2.14 Cassette gear | B | 2 | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| B20 | 2.2.14 Control cam | B | 2 | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | |
| B21 | 2.2.14 Worm gear | B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T10 | - Lid guide | T/B | 5 | | | | | | | | | 1 | 2 | 3 | | | | | | | | 4 | | | | | | | | | | | | |
| B7 | 2.2.15 Control bracket1 | B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B8 | 2.2.15 Control plate | B | 6 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | | | | | | | | | | | |
| B5 | 2.2.16 Loading arm gear (supply side) | B | 7 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | 6 | | | | | | | | | | |
| B4 | 2.2.16 Loading arm gear (take-up side) | B | 8 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | 6 | 7 | | | | | | | | | |
| — | 2.2.16 Loading arm gear shaft | B | 9 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | 6 | 7 | 8 | | | | | | | | |
| B11 | 2.2.17 Take-up lever | T/B | 7 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | 6 | | | | | | | | | | |
| B10 | 2.2.17 Take-up head | T/B | 8 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | 6 | | | 7 | | | | | | | |
| — | 2.2.17 Control plate guide | T/B | 8 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | 6 | | | 7 | | | | | | | |
| B3 | 2.2.18 Capstan brake assembly | T/B | 7 | | | | | | | | | | | | | 1 | 2 | 3 | | | 4 | | 5 | 6 | | | | | | | | | | |
| T14 | 2.2.19 Sub brake assembly(take-up side) | T/B | 15 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | 9 | 10 | 11 | | | 12 | | 13 | 14 | | | | | | | | | | |
| T15 | 2.2.20 Main brake assembly(take-up side) | T/B | 16 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | 9 | 10 | 11 | | | 12 | | 13 | 14 | | | | 15 | | | | | | |
| T19 | 2.2.20 Main brake assembly(supply side) | T/B | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | |
| T13 | 2.2.20 Reel disk (take-up side) | T/B | 16 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | 9 | 10 | 11 | | | 12 | | 13 | 14 | | | | 15 | | | | | | |
| T22 | 2.2.21 Tension brake assembly | T/B | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | |
| T20 | 2.2.21 Reel disk (supply side) | T/B | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | 9 | | |
| T24 | 2.2.21 Tension arm assembly | T/B | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | 9 | | |
| B9 | 2.2.21 Tension arm bearing | T/B | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | 9 | | |
| T18 | 2.2.22 Idler lever | T/B | 17 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | 9 | 10 | 11 | | | 12 | | 13 | 14 | | | | | | | | 15 | 16 | |
| T16 | 2.2.22 Idler arm assembly | T/B | 18 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | 9 | 10 | 11 | | | 12 | | 13 | 14 | | | | | | | | 15 | 16 | 17 |
| B19 | - Brake lever (*1) | T/B | 18 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | 9 | 10 | 11 | | | 12 | | 13 | 14 | | | | 15 | 16 | 17 | | | | |
| B16 | - Rotary encoder guide | T/B | 19 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | 9 | 10 | 11 | | | 12 | | 13 | 14 | | | | 15 | 16 | 17 | | | | 18 |

Table 2-1-5b

**Note:**

- ***The parts with marked ( ∗ ) have different types of mechanisms (standard type or high-speed FF/REW type).***
  - ***∗1 : Uses the standard type mechanism only.***
  - ***∗2 : Uses the high-speed FF/REW type mechanism only.***

## 2.2 Replacement of major parts

### 2.2.1 Before starting disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.
Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.
Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another. (For information on phase matching of the mechanism, see the instructions on how to install individual parts.)
This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

### 2.2.2 How to set the "Mechanism assembling mode"

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-2a.)

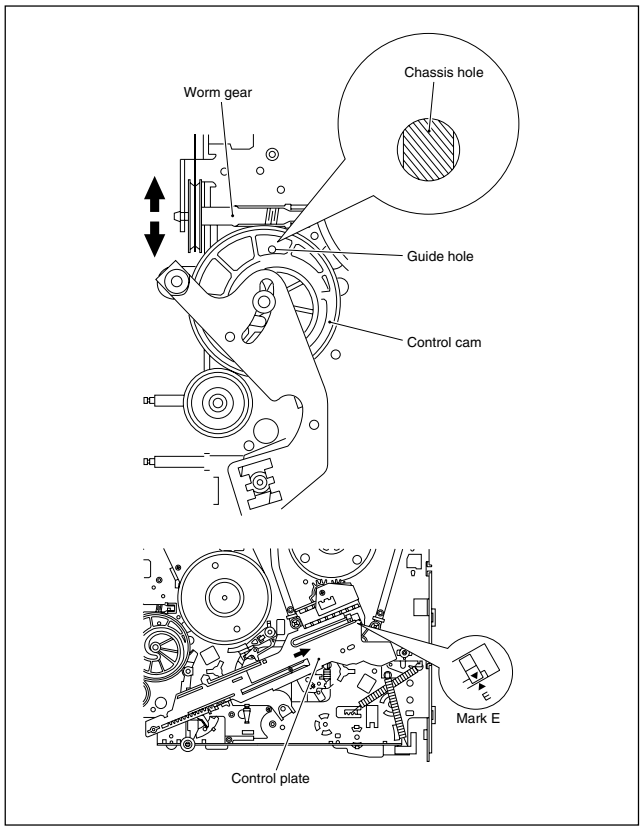



Fig. 2-2-2a

### 2.2.3 Cassette holder assembly

**1. How to remove**

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-3a.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

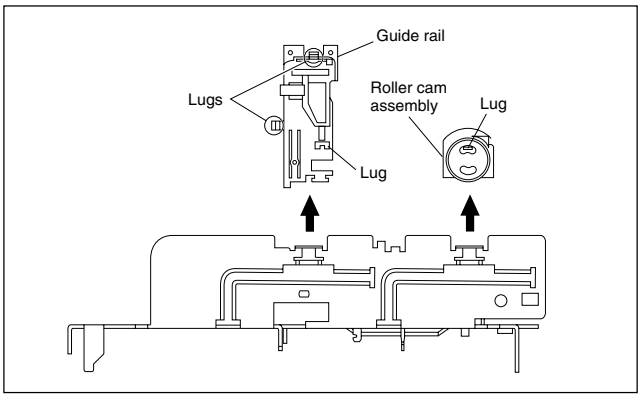



Fig. 2-2-3a

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3b.)
(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3b.)

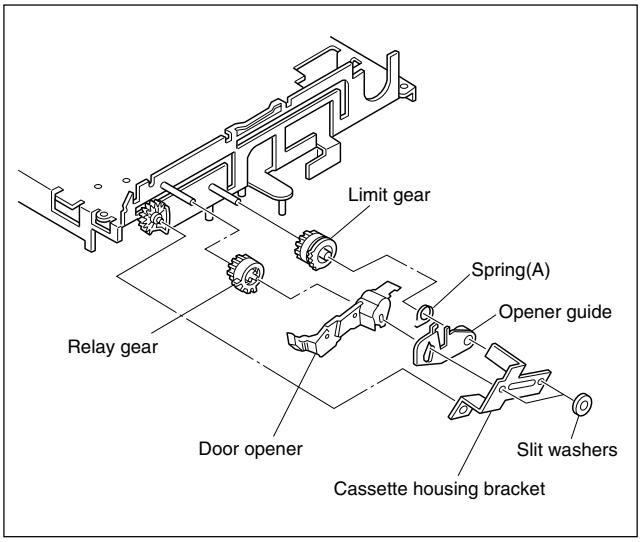



Fig. 2-2-3b

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-3c.)

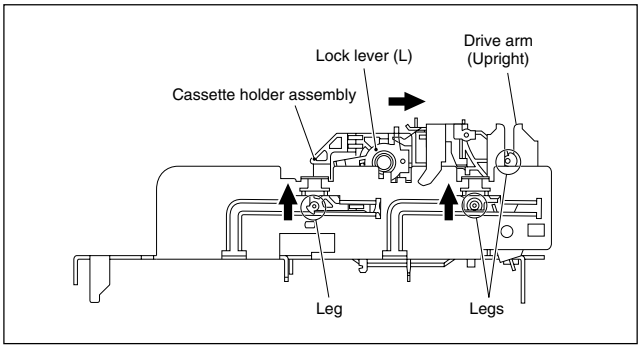



Fig. 2-2-3c

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs (A) and (B) on the right side out of the rail and also pull up the leg(C). (See Fig.2-2-3d and Fig.2-2-3e.)
(6) Draw out the drive gear, and remove the drive arm.

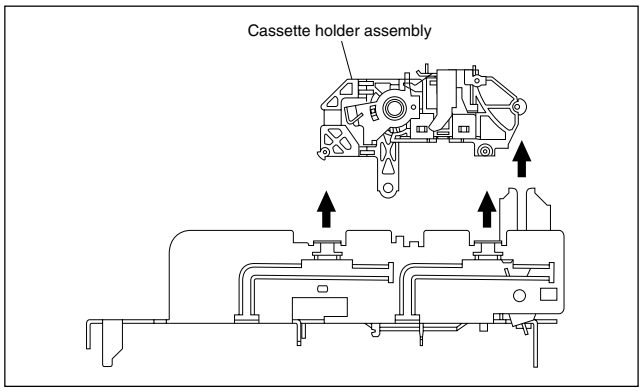



Fig. 2-2-3d

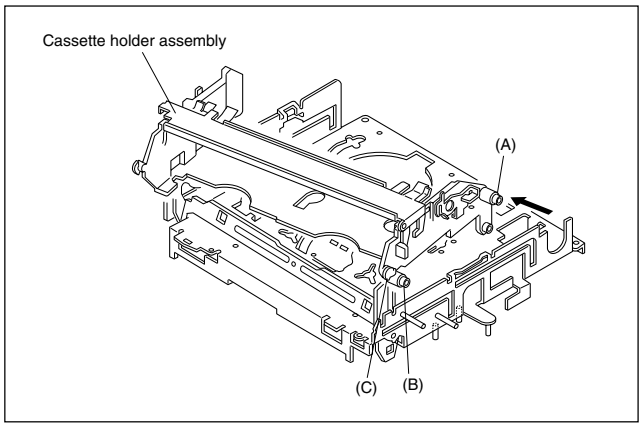



Fig. 2-2-3e

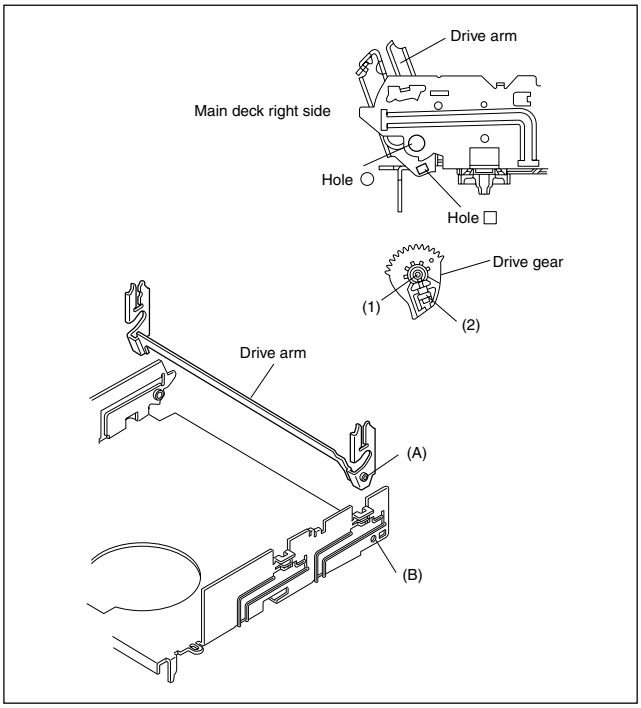



Fig. 2-2-3f

**2. How to install (Phase matching)**
(1) Insert the section (A) of the drive arm into the section (B) of the main deck.
(2) Insert the section (1) of the drive gear into the round hole, and the section (2) into the square hole on the drive arm. (See Fig.2-2-3f.)
(3) Hold the drive arm upright and fit the leg (C) on the right side of the cassette holder assembly into the groove. (See Fig.2-2-3g.)
(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs (A) and (B) into the rail. (See Fig.2-2-3g.)
(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-3h.)
(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.
(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-3i.)
(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-3i.)
(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

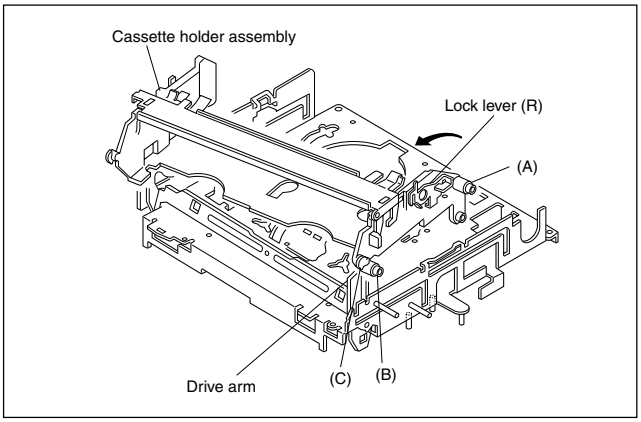



Fig. 2-2-3g

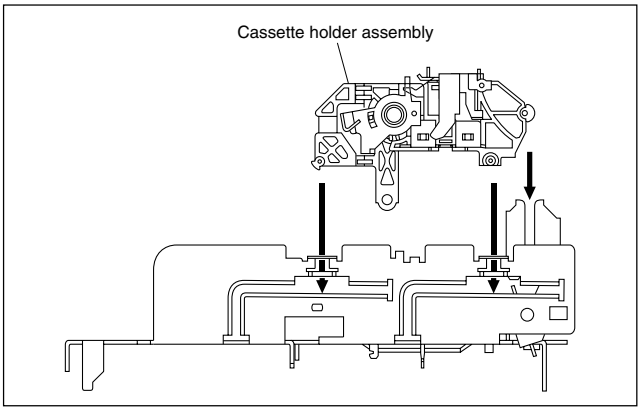



Fig. 2-2-3h

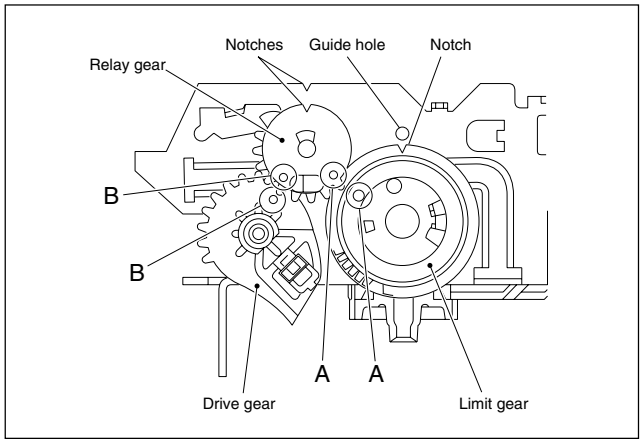



Fig. 2-2-3i

### 2.2.4 Pinch roller arm assembly

**1. How to remove**

(1) Remove the spring from the hook of the press lever assembly.
(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-4a.)
(3) Remove the pinch roller arm assembly by pulling it up.

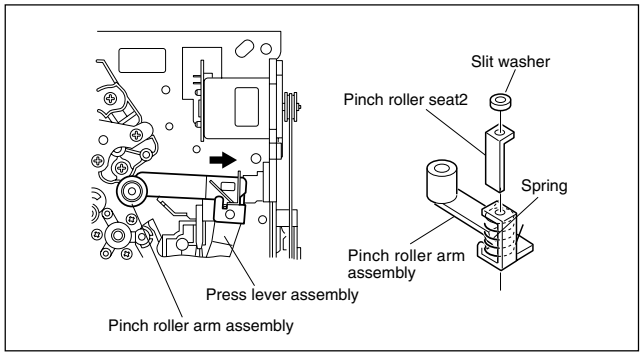



Fig. 2-2-4a

### 2.2.5 Guide arm assembly and press lever assembly

**1. How to remove**

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.
(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-5a.)

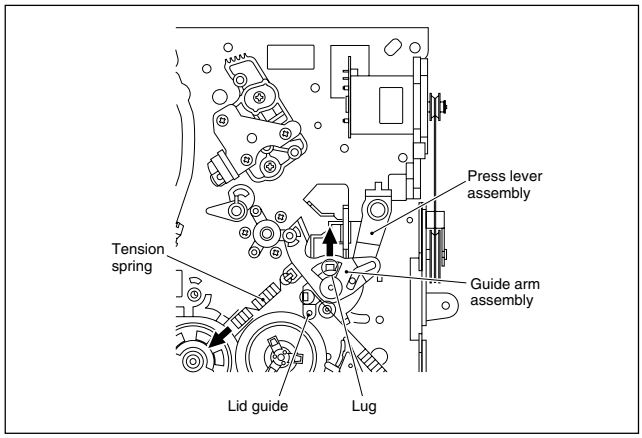



Fig. 2-2-5a

### 2.2.6 A/C head

**1. How to remove**

(1) Remove the two screws (A) and remove the A/C head together with the head base.
(2) When replacing only the A/C head, remove the three screws (B) while controlling the compression spring.

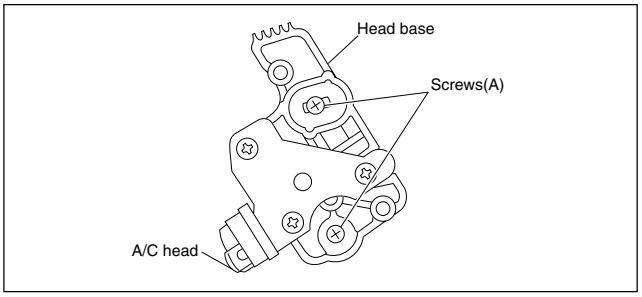



Fig. 2-2-6a

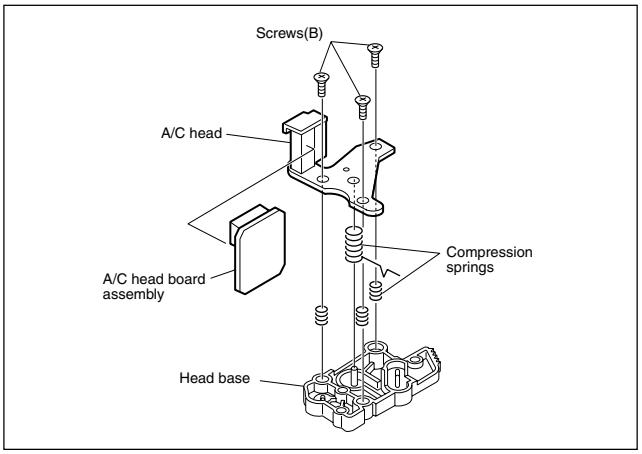



Fig. 2-2-6b

**2. How to install**

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-6c. Also make sure that the screw center (centre) is brought into alignment with the center (centre) position of the slot.

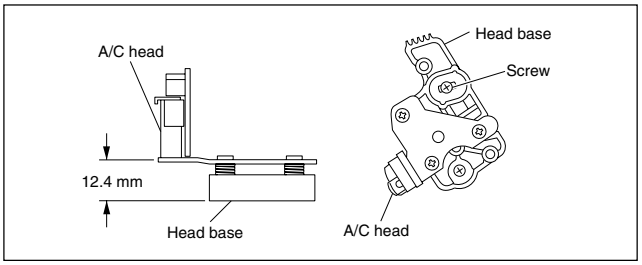



Fig. 2-2-6c

### 2.2.7 Loading motor

**1. How to remove**

(1) Remove the belt wound around the worm gear.
(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.
(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)
(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-7a.

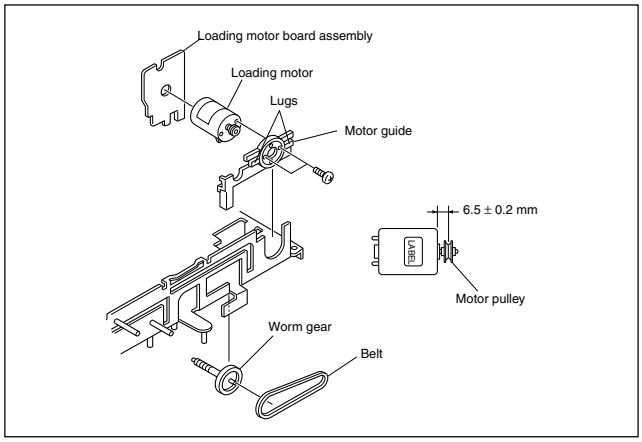



Fig. 2-2-7a

### 2.2.8 Capstan motor

**1. How to remove**

(1) Remove the belt (capstan) on the mechanism assembly back side.
(2) Remove the three screws (A) and remove the capstan motor.

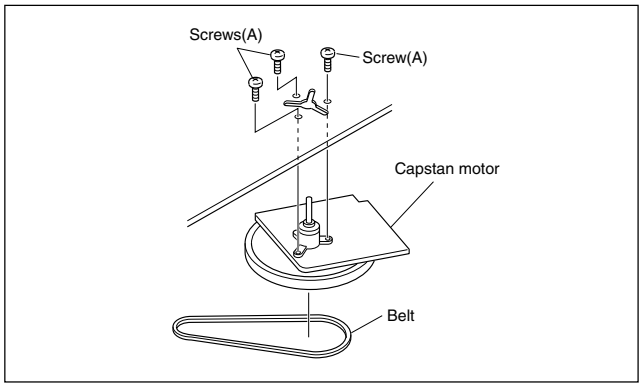



Fig. 2-2-8a

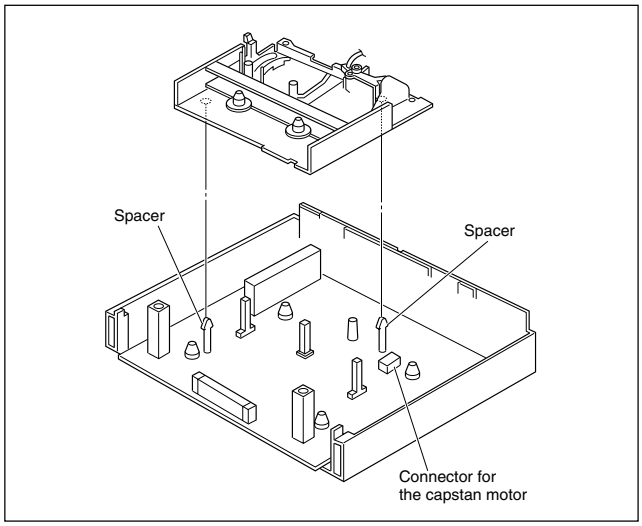



Fig. 2-2-8b

**2. How to install (Centering the mounting position)**

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.
(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.
(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.)
Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-8b.
(3) Making sure that the connector for the capstan motor is correctly mounted, and securely tighten the three screws (A).

**Note:**

- ***When the capstan motor has been replaced with a new one, perform recording in the EP(or LP) mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

### 2.2.9 Pole base assembly (supply or take-up side)

**1. How to remove**

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).
(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.
(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the “Procedures for Lowering the Cassette holder assembly” of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

**Note:**

- ***After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.***

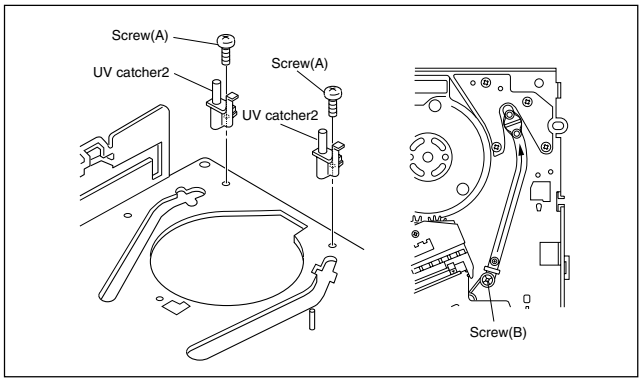



Fig. 2-2-9a

### 2.2.10 Rotary encoder

**1. How to remove**

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-10a.)

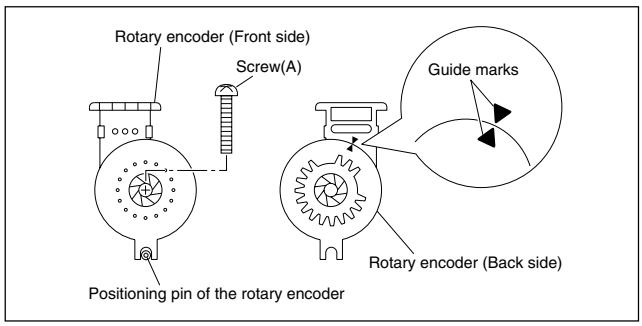



Fig. 2-2-10a

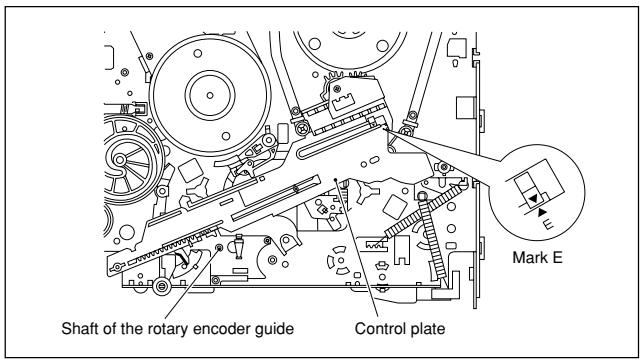



Fig. 2-2-10b

**2. How to install (Phase matching)**

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-10a. (See Fig. 2-2-10a and Fig. 2-2-10b.)

(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.

(3) Tighten the screw (A) to complete the installation.

### 2.2.11 Clutch unit

(1) Remove the belt wound around the capstan motor and the clutch unit.

(2) Remove the slit washer and remove the clutch unit.

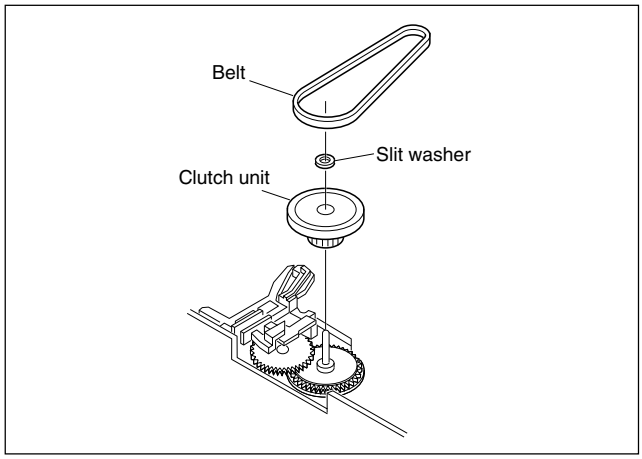


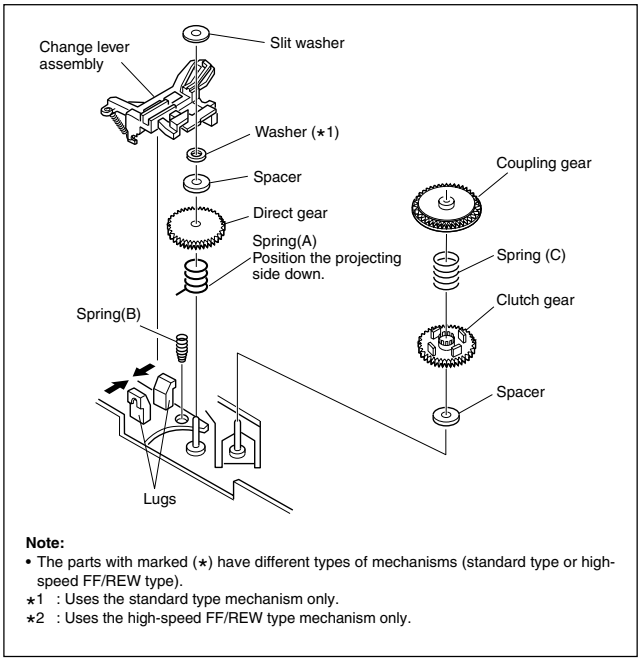

Fig. 2-2-11a

### 2.2.12 Change lever assembly, direct gear, clutch gear and coupling gear

**1. How to remove**

(1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.

(2) Remove the slit washer retaining the direct gear and remove the latter.
Take care so as not to lose the washer and spring. (See Fig.2-2-12a.)




**Note:**
- The parts with marked (*) have different types of mechanisms (standard type or high-speed FF/REW type).

*1 : Uses the standard type mechanism only.
*2 : Uses the high-speed FF/REW type mechanism only.

Fig. 2-2-12a

**2. How to install**

(1) Install the clutch gear, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-12a.)

(2) Let the spring (B) drops into the rotary encoder guide hole and install the change lever assembly.(Take care not to mistake a direction of the spring.) The point is to slightly lift the coupling gear and catch it from the both sides with the assembly. (See Fig.2-2-12b.)

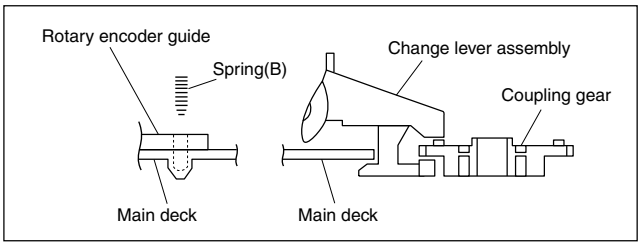



Fig. 2-2-12b

### 2.2.13 Link lever

**1. How to remove**

(1) Remove the two slit washers.
(2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

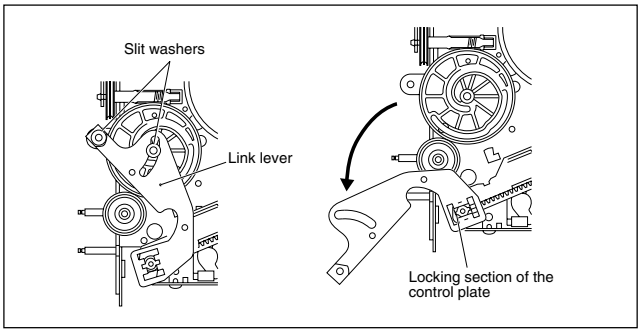



Fig. 2-2-13a

**2. How to install (Phase matching)**

(1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-13b.)
(2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-13c.)
(3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-13a.)
(4) Rotate the link lever clockwise so that it is installed on the shafts in the center (centre) and on the left of the control cam.
(5) Fasten the slit washers at these two points.

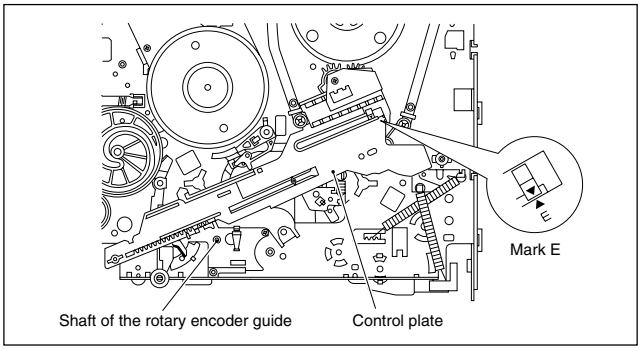



Fig. 2-2-13b

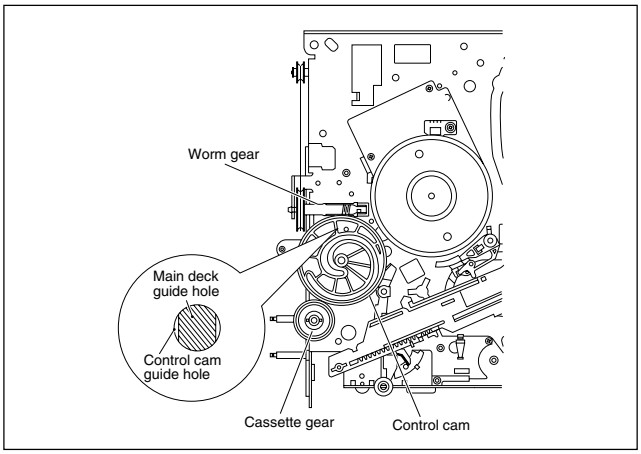



Fig. 2-2-13c

### 2.2.14 Cassette gear, control cam and worm gear

**1. How to remove**

(1) Remove the control cam by lifting it.
(2) Open the two lugs of the cassette gear outward and pull the latter off.
(3) Remove the belt wound around the worm gear and the loading motor.
(4) Open the lug of the lid guide outward and remove the worm gear.

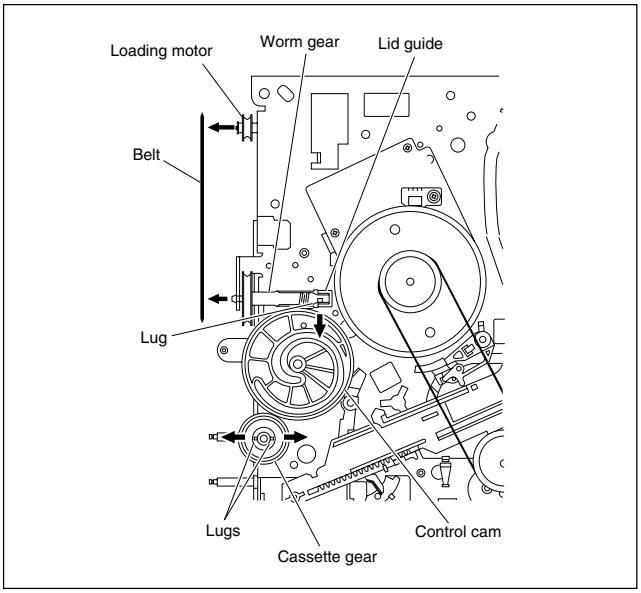



Fig. 2-2-14a

### 2.2.15 Control plate

**1. How to remove**

(1) Remove the screw (A) retaining the control bracket 1 and remove the latter.
(2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-15a.)

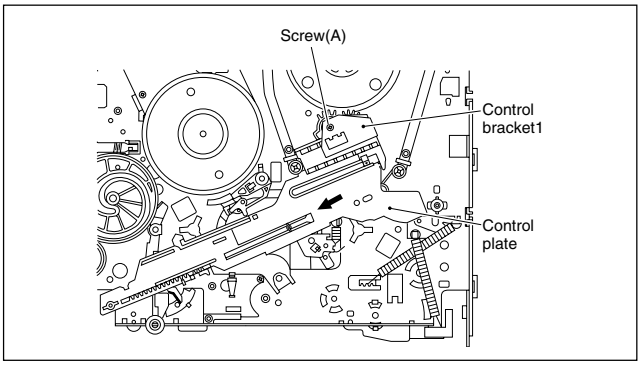



Fig. 2-2-15a

**2. How to install (Phase matching)**

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-15b (to the left of center (centre) of the R section).
(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-15c.)
(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-15c.)
(5) Pull off the hexagonal wrench for positioning.

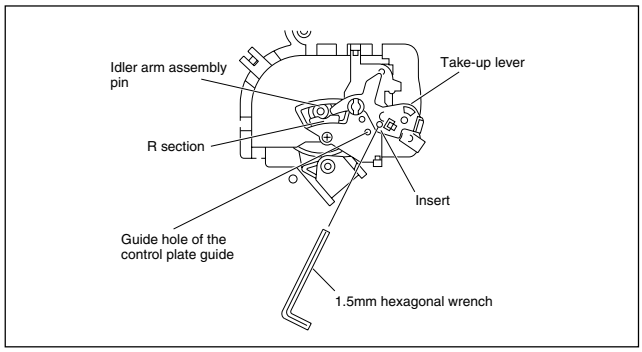



Fig. 2-2-15b

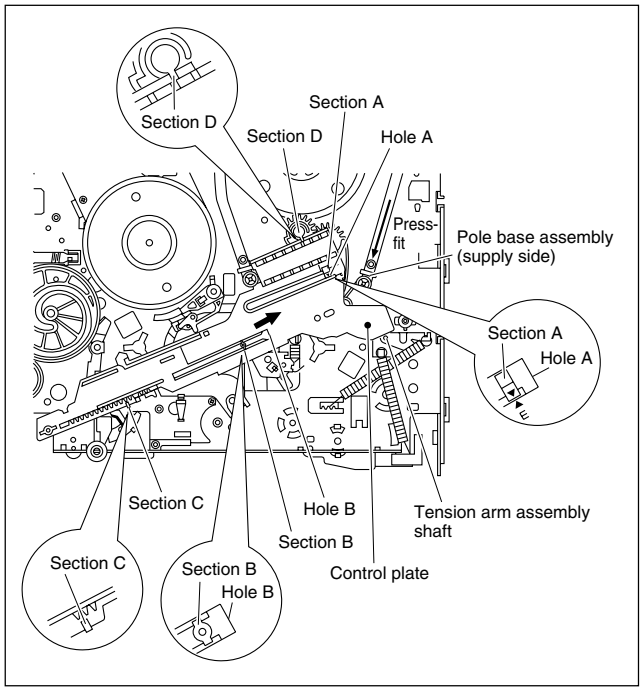



Fig. 2-2-15c

### 2.2.16 Loading arm gear (supply or take-up side) and loading arm gear shaft

**1. How to remove**

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-16a.)
(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-16a.)
(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-16a and Fig. 2-2-16b.)
(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

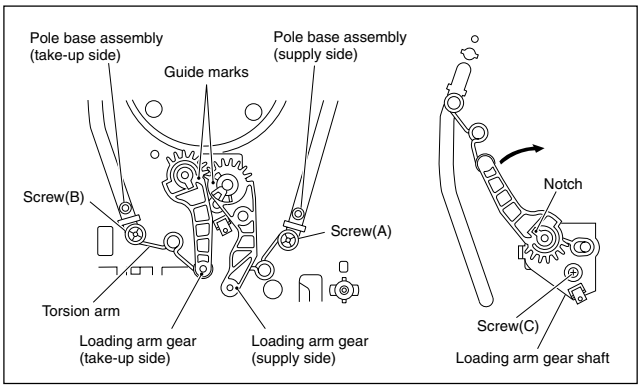



Fig. 2-2-16a

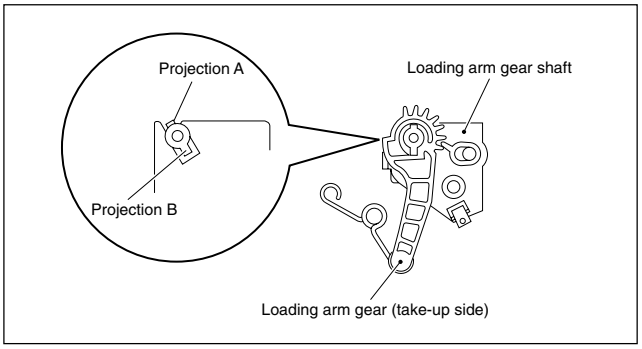



Fig. 2-2-16b

**2. How to install**

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-16b.)
(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).
(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-16a.)

### 2.2.17 Take-up lever, take-up head and control plate guide

(1) Remove the spring of the take-up lever from the main deck.
(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
(3) Remove the screw (A).
(4) Align the idler arm assembly pin in the center (centre) of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

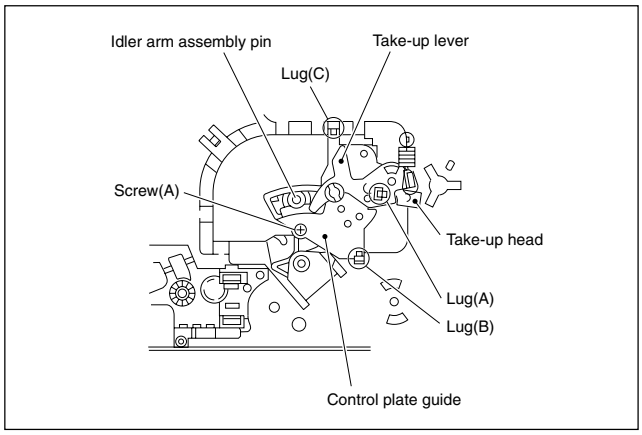



Fig. 2-2-17a

### 2.2.18 Capstan brake assembly

**1. How to remove**

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-18a.)
(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

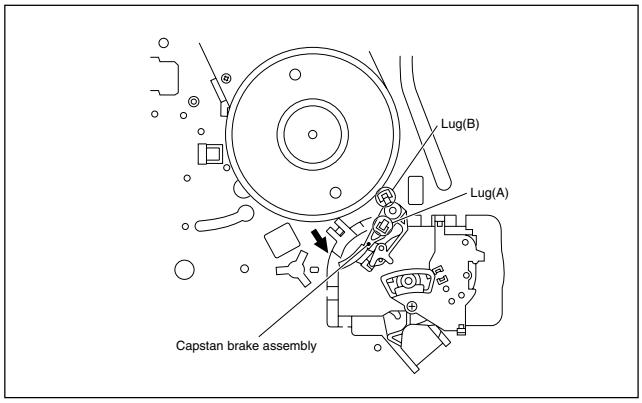



Fig. 2-2-18a

### 2.2.19 Sub brake assembly (take-up side)

**1. How to remove**

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).
(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.
(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

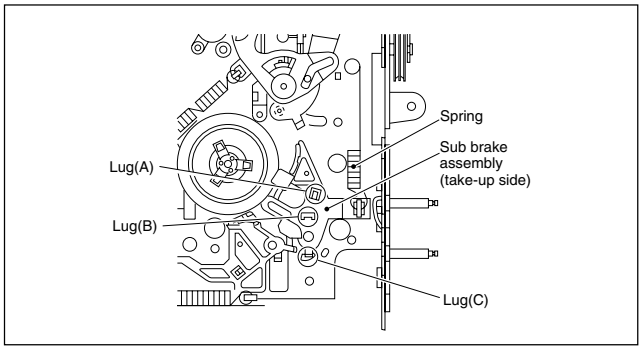



Fig. 2-2-19a

### 2.2.20 Main brake assembly (take-up side), reel disk (take-up side) and main brake assembly (supply side)

**1. How to remove**

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).
(2) Remove the spring attached to the main brake assembly.
(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.
(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-20a.)
(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-20b.)

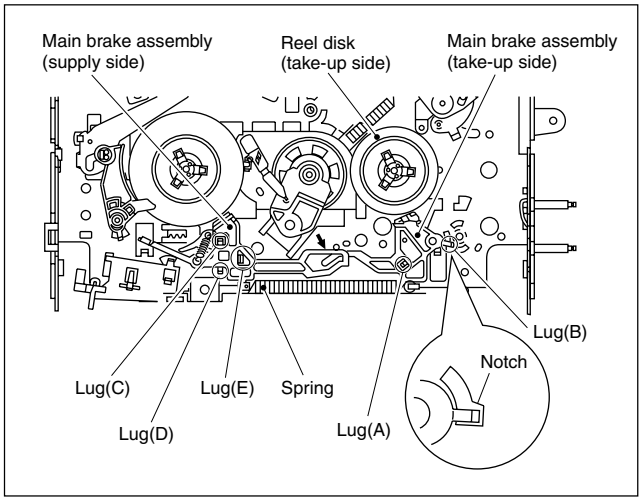
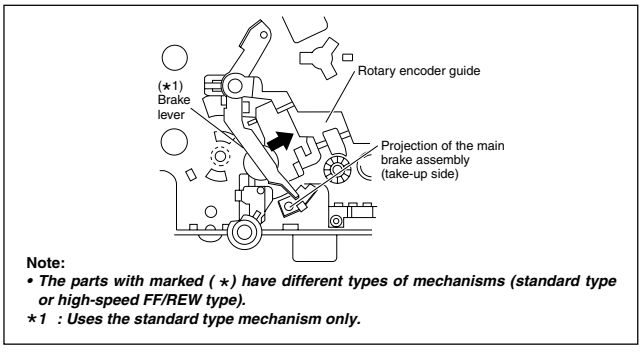



Fig. 2-2-20a




**Note:**
***• The parts with marked ( ∗) have different types of mechanisms (standard type or high-speed FF/REW type).***
***∗1 : Uses the standard type mechanism only.***

Fig. 2-2-20b

### 2.2.21 Tension brake assembly, reel disk (supply side) and tension arm assembly

**1. How to remove**

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.
(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).
(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-21a.)

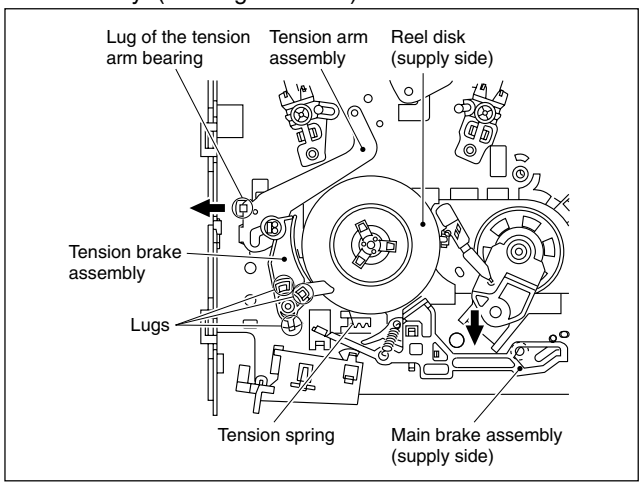



Fig. 2-2-21a

### 2.2.22 Idler lever, idler arm assembly

**1. How to remove**

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.
(2) Remove the slit washer and pull out the idler arm assembly.

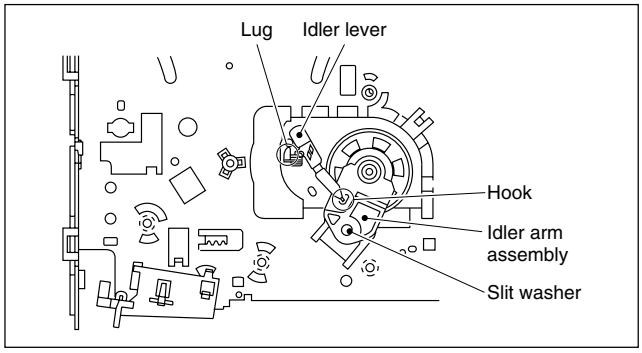



Fig. 2-2-22a

### 2.2.23 Stator assembly

(1) Remove the flat cable.
(2) Remove the two screws (A), (B) and remove the lug wire.
(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)

**Notes:**

- ***Be careful not to lose the brush and spring.***
- ***There are some models that do not use the lug wire. Refer to the parts list for these models.***
- ***When tightening the screw (B), place the caulked part of the lug terminal near to the shaft of the drum and then tighten it.***
- ***After installation, be sure to perform the switching point adjustment according to the electrical adjustment procedure.***

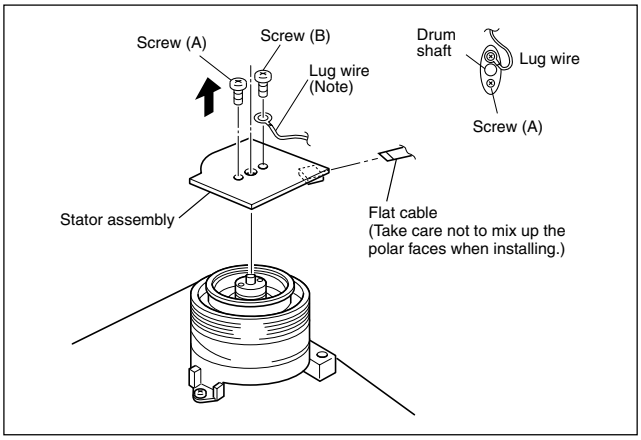



Fig. 2-2-23a

### 2.2.24 Rotor assembly

**1. How to remove**

(1) Remove the stator assembly.
(2) Remove the two screws (B) and remove the rotor assembly.

**2. How to install**

(1) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-24a.
(2) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-24a.)

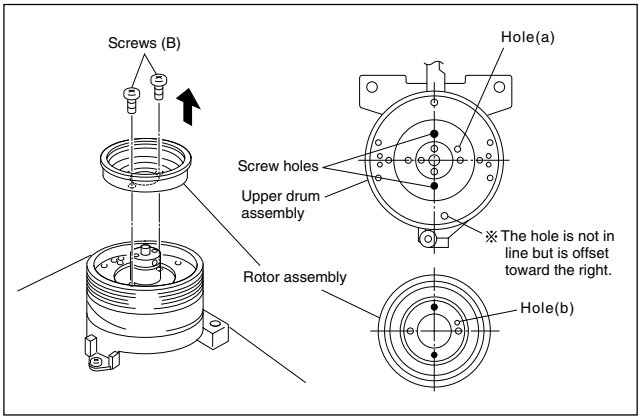



Fig. 2-2-24a

### 2.2.25 Upper drum assembly

**Notes:**

- ***To replace the upper drum assembly only may not be possible with some models. For upper drum assembly replacement, refer to the parts list. (When the parts number of the upper drum assembly is not listed on the parts list, then this cannot be replaced.)***
- ***When replacement is required, control the up- down movement of the brush. Never apply grease.***
- ***When replacing the upper drum assembly, replace it the together with the washer.***

**1. How to remove**

(1) Remove the stator assembly and rotor assembly.
(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
(3) Remove the upper drum assembly and remove the washer using tweezers.

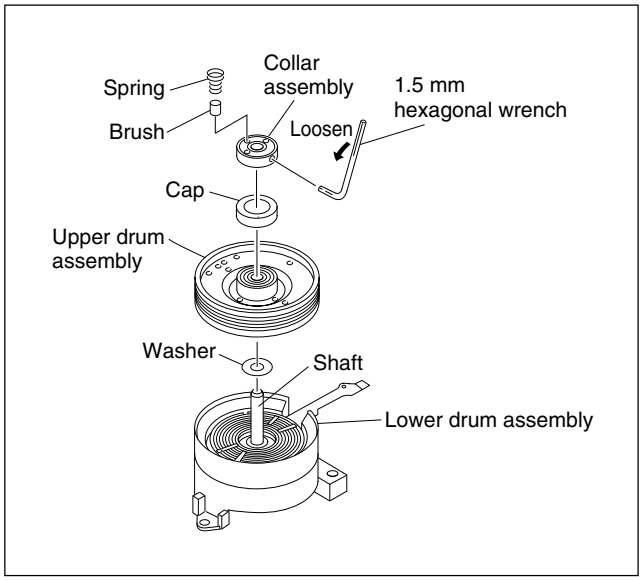



Fig. 2-2-25a

**2. How to install**

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-25b.)
(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-25a.)
(3) Install the cap to the upper drum assembly.
(4) Position the collar assembly as indicated in Fig.2-2-25c while controlling its up- down movement.
(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.
(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.
(7) Install the rotor assembly and stator assembly according to Fig 2-2-23a and 2-2-24a.
(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.
    - PB switching point adjustment
    - Slow tracking adjustment
    - Compatibility adjustment (Be sure to check for compatibility for the EP (or LP) mode.)

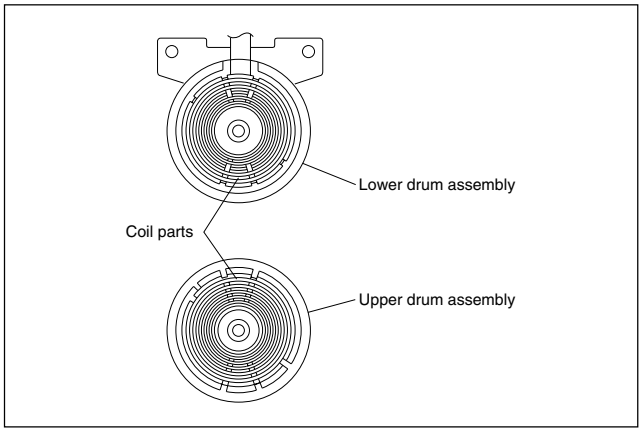



Fig. 2-2-25b

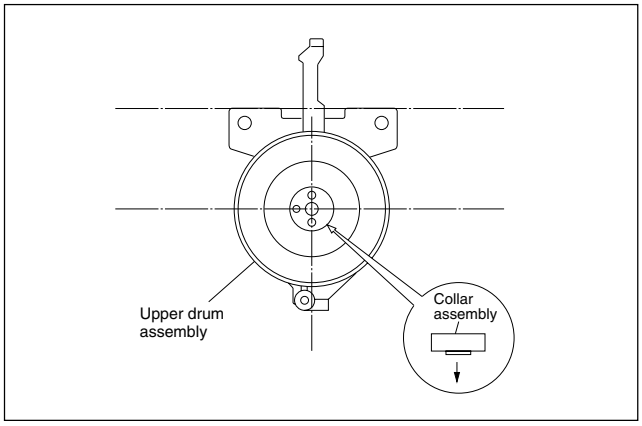



Fig. 2-2-25c

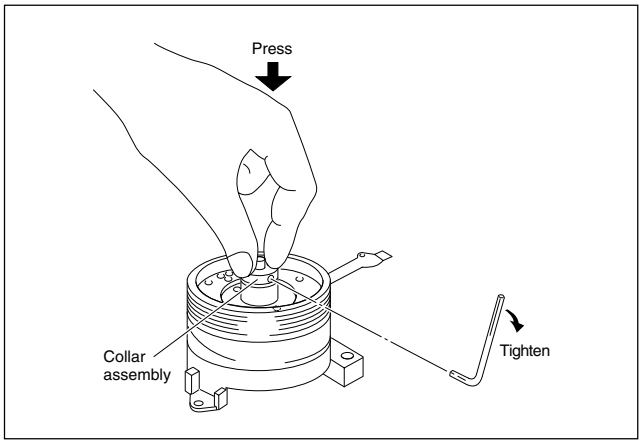



Fig. 2-2-25d

### 2.3 Compatibility adjustment

**Notes:**

- ***Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the A/C head, drum assembly or any part of the tape transport system.***
- ***To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***
- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)***

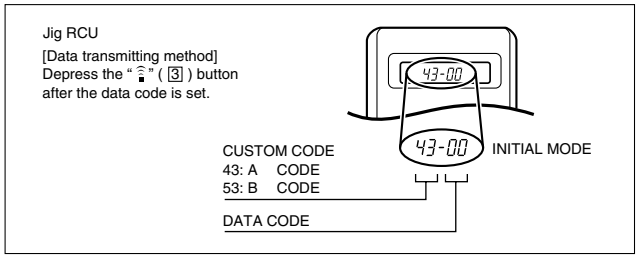



Fig. 2-3a Jig RCU [PTU94023B]

#### 2.3.1 FM waveform linearity

| | | |
|---|---|---|
| Signal | (A1)<br>(A2) | • Alignment tape(SP, stairstep, NTSC) [MHP]<br>• Alignment tape(EP, stairstep, NTSC) [MHP-L] |
| Mode | (B) | • PB |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D) | • TP106 (PB. FM) |
| External trigger | (E) | • TP111 (D.FF) |
| Adjustment part | (F) | • Guide roller [Mechanism assembly] |
| Specified value | (G) | • Flat V.PB FM waveform |
| Adjustment tool | (H) | • Roller driver [PTU94002] |

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 2-3-1a.)
(5) Reduce the V.PB FM waveform by the tracking operation. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 2-3-1c.)
(6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
(8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 2-3-1d.)

**[Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]**

(9) Repeat steps (1) to (8) by using the alignment tape (A2).

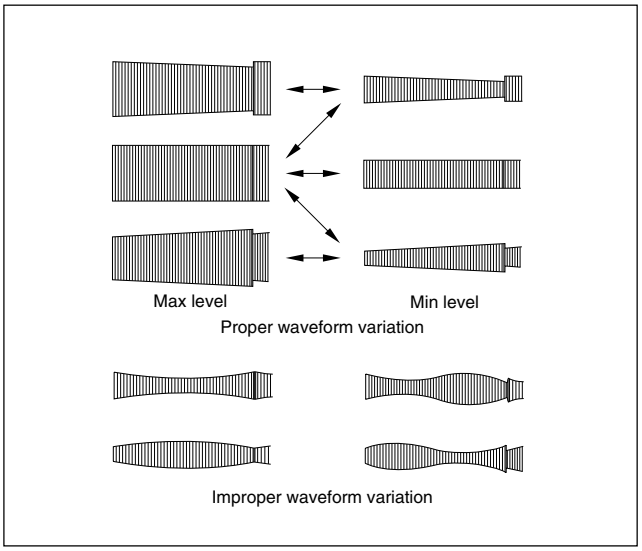



Fig. 2-3-1a

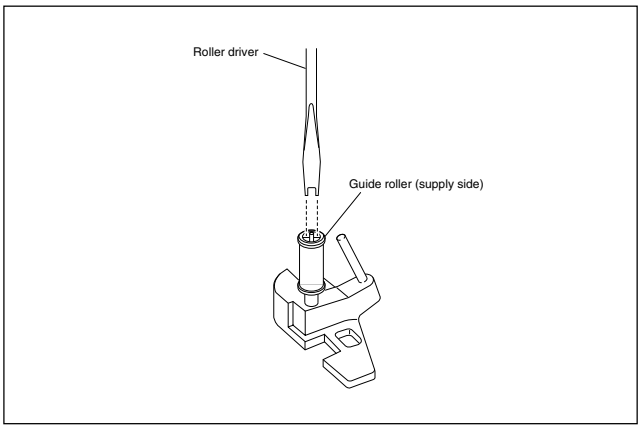



Fig. 2-3-1b

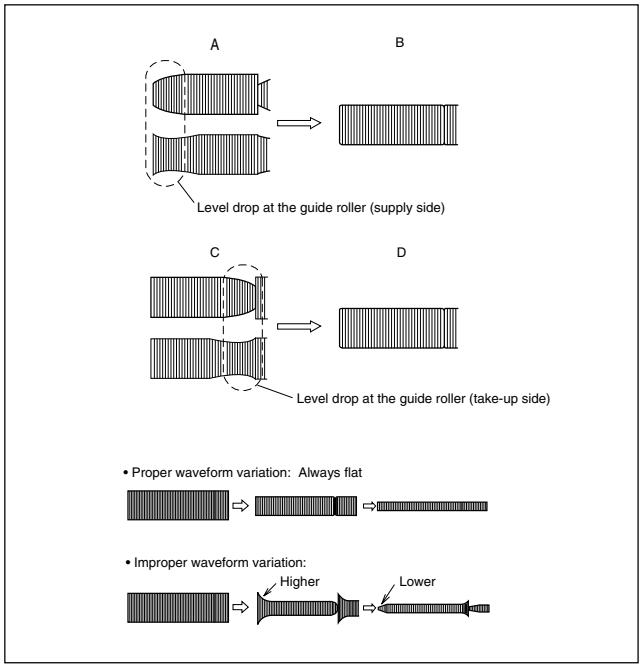



Fig. 2-3-1c

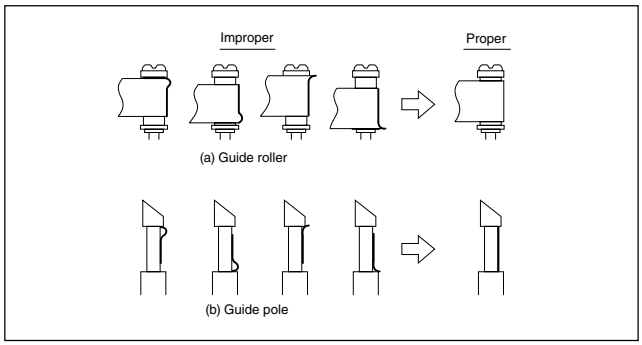



Fig. 2-3-1d

### 2.3.2 Height and tilt of the A/C head

**Note:**

- ***Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-6c.)***

| | | |
|---|---|---|
| Signal | (A) | • Alignment tape(SP, stairstep, NTSC) [MHP] |
| Mode | (B) | • PB |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D1)<br>(D2) | • AUDIO OUT terminal<br>• TP4001 (CTL. P) |
| External trigger | (E) | • TP111 (D.FF) |
| Adjustment part | (F) | • A/C head [Mechanism assembly] |
| Specified value | (G) | • Maximum waveform |

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Set the VCR to the manual tracking mode.
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

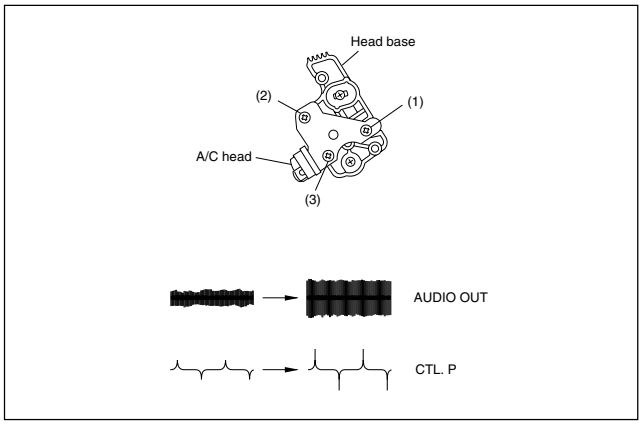



Fig. 2-3-2a

### 2.3.3 A/C head phase (X-value)

| | | |
|---|---|---|
| Signal | (A1) | • Alignment tape(SP, stairstep, NTSC) [MHP] |
| Mode | (B) | • PB |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D) | • TP106 (PB. FM) |
| External trigger | (E) | • TP111 (D.FF) |
| Adjustment part | (F) | • A/C head base [Mechanism assembly] |
| Specified value | (G) | • Maximum V.PB FM waveform |
| Adjustment tool | (H) | • A/C head positioning tool [PTU94010] |

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Loosen the screws (4) and (5), then set the A/C head positioning tool to the innermost projected part of the A/C head. (See Fig. 2-3-3a.)
(5) Turn the A/C head positioning tool fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the V.PB FM waveform output level. Then tighten the screws (4) and (5).
(6) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

**[Perform adjustment steps (7) to (10) only for 2 Head models equipped with LP mode.]**

(7) Then play back the alignment tape (A2).
(8) Set the VCR to the manual tracking mode.
(9) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
(10) If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

**Note:**

- ***After adjusting, always perform the confirmation and re-adjustment of the item 2.3.4.***

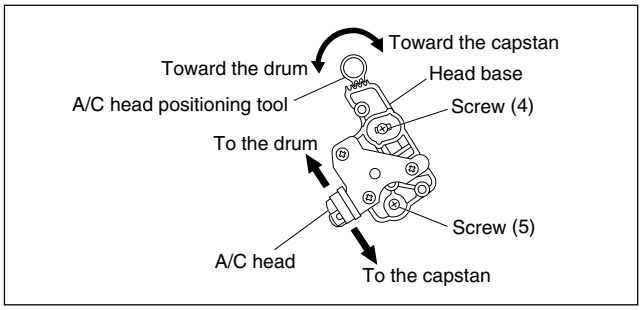



Fig. 2-3-3a

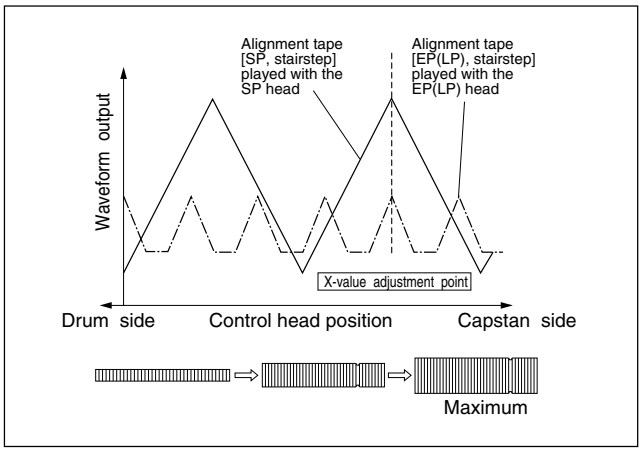



Fig. 2-3-3b

### 2.3.4 Standard tracking preset

| | | |
|---|---|---|
| Signal | (A) | • Alignment tape(EP, stairstep, NTSC) [MHP-L] |
| Mode | (B) | • PB → Auto adjust |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D) | • TP106 (PB. FM) |
| External trigger | (E) | • TP111 (D.FF) |
| Adjustment part | (F) | • Jig RCU: Code “50” |
| Specified value | (G) | • STOP mode (Maximum V.PB FM waveform) |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Confirm that the automatic tracking operation is completed.
(4) Set the VCR to the Auto adjust mode by transmitting the code (F) twice from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(5) If the VCR enters the eject mode, perform adjustment for the audio control head phase (X-value) again.

### 2.3.5 Tension pole position

| | | |
|---|---|---|
| Signal | (A) | • Back tension cassette gauge [PUJ48076-2] |
| Mode | (B) | • PB |
| Adjustment part | (F) | • Adjust pin [Mechansim assembly] |
| Specified value | (G) | • 25 - 51 gf•cm (2.45 – 5 × $10^{-3}$ Nm] |

(1) Play back the back tension cassette gauge (A).
(2) Check that the indicated value on the left side gauge is within the specified value (G).
(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.
  1) Set the VCR to the mechanism service mode. (See SECTION 1 DISASSEMBLY.)
  2) Set the VCR to the play back mode and adjust by turning adjustment pin to align the tension arm assembly edge with the main deck hole (A) on the right edge marker. (See Fig. 2-3-5a)

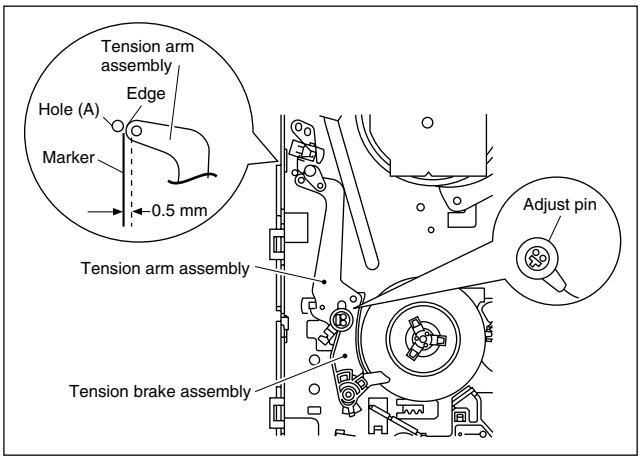
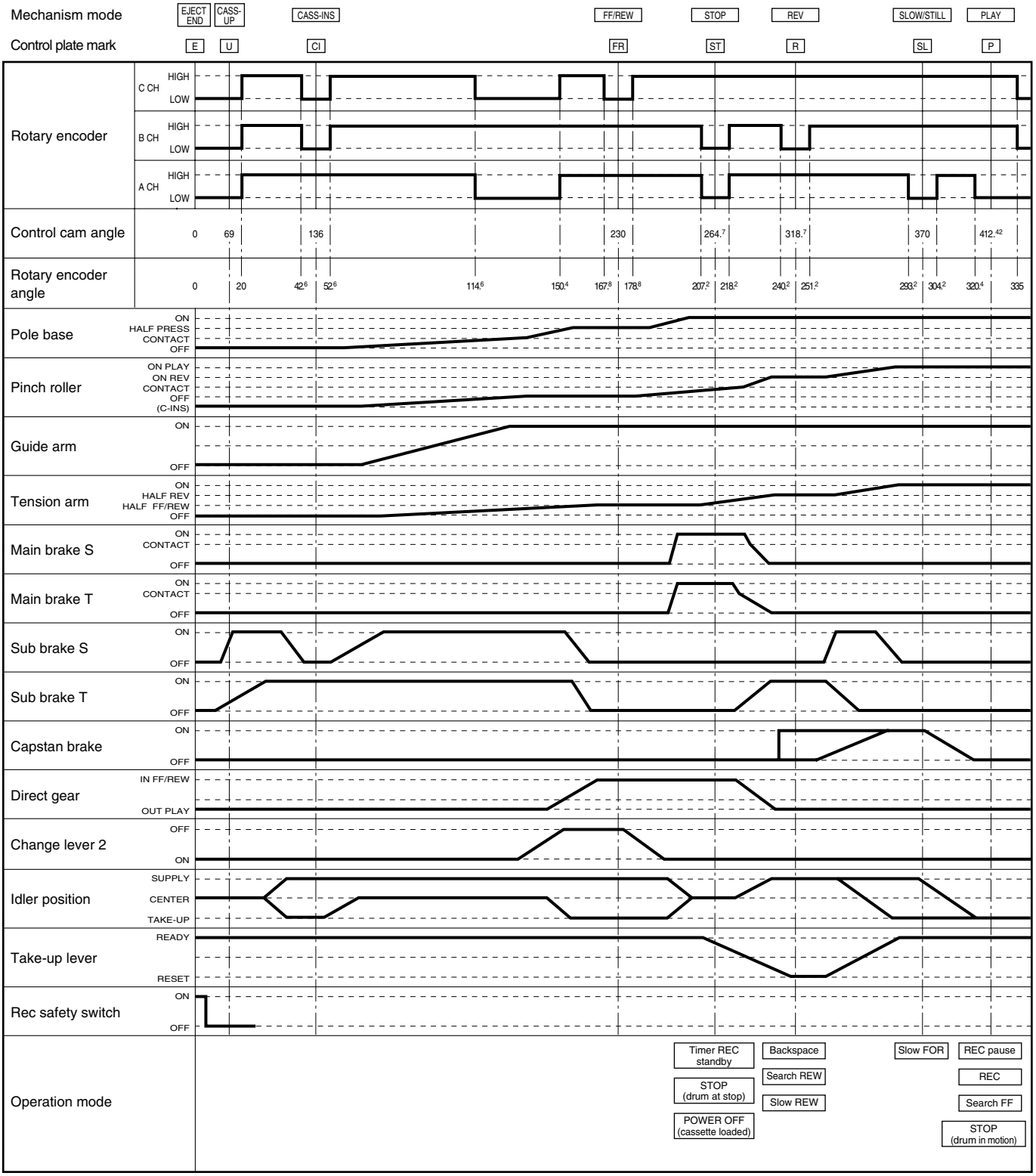



Fig. 2-3-5a

## Mechanism Timing Chart



# SECTION 3
# ELECTRICAL ADJUSTMENT

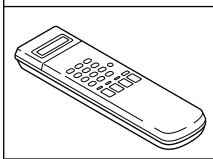
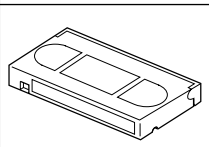
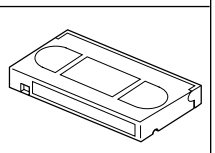
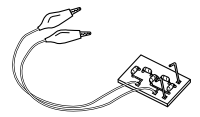
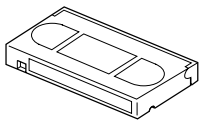
## 3.1 Precaution

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

### 3.1.1 Required test equipments

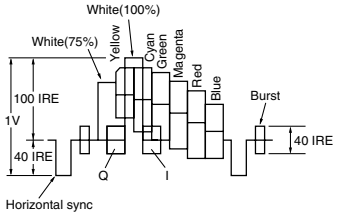
- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Frequency counter
- Audio level meter
- Signal generator: RF / IF sweep / marker
- Signal generator: stairstep, color (colour) bar [NTSC]
- Recording tape
- Digit-key remote controller (provided)

### 3.1.2 Required adjustment tools

| | | |
|---|---|---|
| Jig RCU<br>PTU94023B | Alignment tape<br>(SP, stairstep, NTSC)<br>MHP | Alignment tape<br>(EP, stairstep, NTSC)<br>MHP-L |
|  |  |  |
| LPF<br>PTU93006 | Alignment tape<br>(S-VHS, SP/EP, color (colour) bar)<br>MH-1H | |
|  |  | |

### 3.1.3 Color (colour) bar signal,Color (colour) bar pattern

● **Color bar signal [NTSC]**




● **Color bar pattern [NTSC]**

### 3.1.4 Switch settings and standard precautions

The SW settings of the VCR and the standard precautions for the electrical adjustments are as follows.

- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)***

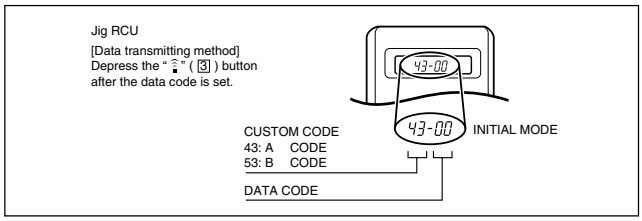



Fig. 3-1-4a Jig RCU [PTU94023B]

- ***Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.***
  ***If the VCR is not equipped with the functions detailed below, setup is not required.***

| | |
|---|---|
| AUTO PICTURE/VIDEO CALIBRATION/ B.E.S.T./D.S.P.C. | OFF |
| PICTURE CONTROL/SMART PICTURE | NORMAL/NATURAL |
| VIDEO STABILIZER | OFF |
| TBC | ON |
| Digital 3R | ON |
| VIDEO NAVIGATION/TAPE MANAGER | OFF |

- ***If there is a reference to a signal input methed in the signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***

### 3.1.5 EVR Adjustment

Some of the electrical adjustments require the adjustment performed by the EVR system. The main unit have EEPROMs for storing the EVR adjustment data and user setups.

**Notes:**

- ***In the EVR adjustment mode, the value is varied with the channel buttons (+, –). The adjusted data is stored when the setting mode changes (from PB to STOP, when the tape speed is changed, etc.). Take care to identify the current mode of each adjustment item when making an adjustment.***
- ***When changing the address setting in the EVR adjustment mode, use the Jig RCU or the remote controller having numeric keypad with which a numeric code can be directly input.***
  ***The remote control code of the Jig RCU corresponds to each of the digit keys on the remote controller as follows.***

| Digit-key | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Code | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |

- ***As the counter indication and remaining tape indication are not displayed FDP during the EVR adjustment mode, check them on the TV monitor screen.***
- ***When performing the EVR adjustment, confirm that the FDP indication is changed to the EVR mode, as shown below.***

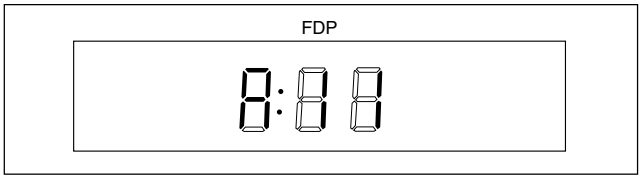



Fig. 3-1-5a EVR mode

### 3.2 Servo circuit

#### 3.2.1 Switching point

| | | |
|---|---|---|
| Signal | (A1)<br>(A2) | • Stairstep signal<br>• Alignment tape (SP,stairstep,NTSC) [MHP] |
| Mode | (B) | • PB |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D1)<br>(D2) | • VIDEO OUT terminal (75Ω terminated)<br>• TP106 (PB. FM) |
| External trigger | (E) | • TP111 (D.FF)/slope : – |
| Adjustment part | (F) | • Jig code “5A” |
| Specified value | (G) | • 7.5 ± 0.5H |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Play back the signal (A1) of the alignment tape (A2).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Set the VCR to the manual tracking mode.
(4) Adjust tracking so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(6) If the VCR enters the eject mode, repeat steps (1) to (5) again.
(7) Play back the alignment tape (A2) again, confirm that the switching point is the specified value (G).

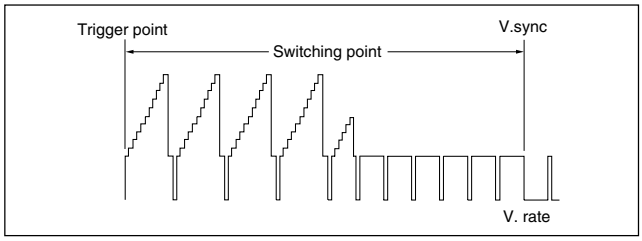



Fig. 3-2-1a Switching point

#### 3.2.2 Slow tracking preset

| | | |
|---|---|---|
| Signal | (A1)<br>(A2) | • Ext. input<br>• Color (colour) bar signal [NTSC] |
| Mode | (B1)<br>(B2) | • VHS SP<br>• VHS EP |
| Measuring point | (D) | • TV-Monitor |
| Adjustment part | (F) | • Jig code “71“ or “72” |
| Specified value | (G) | • Minimum noise |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(2) Set the VCR to the manual tracking mode.
(3) Set the VCR to the FWD slow (+1/6x) mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.
(7) Repeat steps (3) to (6) in the REV slow (–1/6x) mode.
(8) Repeat steps (1) to (7) in the mode (B2).

**Note:**

- ***For FWD slow (+1/6x) playback, transmit the code “08” from the Jig RCU to enter the slow playback mode, and transmit the code “D0” for REV slow (–1/6x) mode.***

### 3.3 Video circuit

#### 3.3.1 D/A level

| | | |
|---|---|---|
| Signal | (A1)<br>(A2)<br>(A3) | • Ext. S-input / Ext. input<br>• Color (colour) bar signal [NTSC]<br>• S-VHS tape |
| Mode | (B) | • S-VHS<br>• EE |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D) | • VIDEO OUT terminal (75Ω terminated) |
| Adjustment part | (F) | • VR1201 (D/A LEVEL ADJ)<br>[2D DIGITAL board] |
| Specified value (Note) | (G) | • 1.00 ± 0.015 Vp-p (reference value) |

(1) Insert the cassette tape (A3) to enter the mode (B).
(2) Observe the VIDEO OUT waveform at the measuring point (D).
(3) Check the Y level value when the External S-input (Y/C separated video signal).
(4) Switch the input signal to the External input (composite video signal), and adjust the adjustment part (F) so that the Y level becomes the same value observed in step (3).

**Note:**

- ***The specified value (G) is just a reference value to be obtained when the External S-Video (Y/C separated video) signal is input. In actual adjustment, set it to the value observed in step (3).***

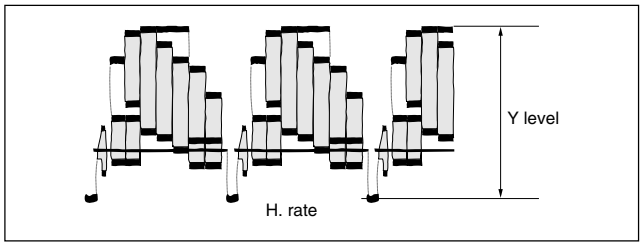



Fig. 3-3-1a D/A level

#### 3.3.2 EE Y/PB Y (S-VHS/VHS) level

| | | |
|---|---|---|
| Signal | (A1)<br>(A2) | • Ext. input<br>• Color (colour) bar signal [NTSC] |
| Mode | (B1)<br>(B2)<br>(B3) | • EE<br>• S-VHS SP<br>• VHS SP |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D) | • Y OUT terminal (75Ω terminated) |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 11<br>• Jig code “21”<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • 1.00 ± 0.05 Vp-p |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Observe the Y OUT waveform at the measuring point (D).
(2) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.

(3) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(4) Transmit the code (F4) from the Jig RCU to adjust so that the Y level of the Y OUT waveform becomes the specified value (G).
(5) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(6) Record the signal (A2) in the mode (B2), and play back the recorded signal.
(7) Set the VCR to the manual tracking mode.
(8) Repeat steps (1) to (5) in the mode (B2).
(9) Record the signal (A2) in the mode (B3), and play back the recorded signal.
(10) Set the VCR to the manual tracking mode.
(11) Repeat steps (1) to (5) in the mode (B3).

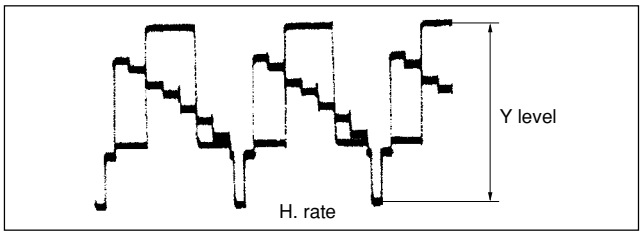



Fig. 3-3-2a EE/PB Y level

### 3.3.3 REC color (colour) level

| | | |
|---|---|---|
| Signal | (A1) | • Alignment tape(S-VHS, SP/EP, Color(colour) bar) [MH-1H] |
| | (A2) | • Ext. input |
| | (A3) | • Color (colour) bar signal [NTSC] |
| Mode | (B1) | • S-VHS SP |
| | (B2) | • S-VHS EP |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D1) | • TP106 (PB. FM) |
| | (D2) | • PB color (colour) output of the LPF |
| External trigger | (E) | • TP111 (D.FF) |
| EVR mode | (F1) | • Jig code “57” |
| EVR address | (F2) | • A : 02 |
| | (F3) | • Jig code “20” and “22” |
| | (F4) | • Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • SP: “B” x 125 ± 5% |
| | | • EP: “B” x 125 ± 5% |
| Adjustment tool | (H1) | • Jig RCU [PTU94023B] |
| | (H2) | • LPF [PTU93006] (See Fig. 3-3-3a.) |

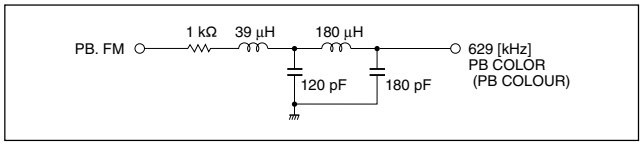



Fig. 3-3-3a LPF

(1) Connect the adjustment tool (H2) to the measuring point (D1).
(2) Apply the external trigger signal to D.FF (E) to observe the PB color (colour) waveform at the measuring point (D2).
(3) Play back the signal (A3) in the mode (B1) of the alignment tape (A1).
(4) Set the VCR to the manual tracking mode.
(5) Adjust tracking so that the PB color (colour) waveform becomes maximum. Make a note of the higher PB color (colour) level as “B” at this time.
(6) Record the signal (A3) in the mode (B1), and play back the recorded signal.
(7) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(8) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(9) Transmit the code (F4) from the Jig RCU to adjust so that the higher level channel becomes the specified value (G) of the note "B" level as shown in Fig. 3-3-3b. (Adjust before recording, then confirm it by playing back.)
(10) After adjustment, record the signal (A3) then playing it back again. At this time, confirm that there is no inverting phenomenon or noise appearing on the playback screen.
(11) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(12) Repeat steps (3) to (11) in the mode (B2).

**Note:**

- ***After adjusting, always perform the confirmation and re-adjustment of the item 3.4.1.***

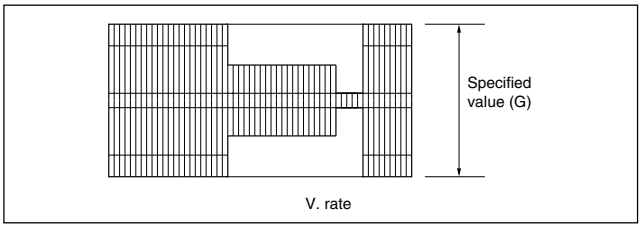



Fig. 3-3-3b REC color (colour) level

### 3.3.4 Video EQ (Frequency response)

| | | |
|---|---|---|
| Signal | (A1) | • Ext. S-input |
| | (A2) | • Video sweep signal |
| Mode | (B1) | • S-VHS SP |
| | (B2) | • S-VHS EP |
| | (B3) | • Picture Control / Smart Picture<br>REC : Normal / Natural<br>PB : Edit / Distinct |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D1) | • Y OUT terminal (75Ω terminated) |
| Frequency marker | (D2) | • 3 [MHz] |
| External trigger | (E) | • TP111 (D.FF) |
| EVR mode | (F1) | • Jig code “57” |
| EVR address | (F2) | • A : 03 |
| | (F3) | • Jig code “20” and “23” |
| | (F4) | • Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • SP: 2.8 ± 0.3 div. (–3 ± 1 dB) |
| | | • EP: 2.8 ± 0.3 div. (–3 ± 1 dB) |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Apply the external trigger signal to D.FF (E) to observe the Y OUT waveform at the measuring point (D1).
(2) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(3) Set the VCR to the manual tracking mode.
(4) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(5) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(6) Set the slope of the oscilloscope to the channel having higher (D2) marker level of the Y OUT waveform [signal (A2)]. Then set the 100 kHz marker level to the “4” scale on the oscilloscope. In this condition, transmit the code (F4) from the Jig RCU to adjust so that the (D2) marker level reaches the specified value (G).

(7) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(8) Repeat steps (2) to (7) in the mode (B2).

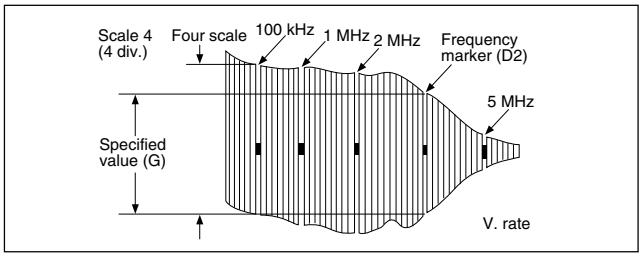



Fig. 3-3-4a Video EQ (Frequency Response)

### 3.3.5 Auto picture initial setting

| | | |
|---|---|---|
| Signal | (A1)<br>(A2)<br>(A3) | • Ext. input<br>• Video: Optional<br>• VHS tape |
| Mode | (B) | • EE → Auto adjust (SP/EP REC → PB) |
| Adjustment part | (F) | • Jig code “58” |
| Specified value | (G) | • STOP mode |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Insert the cassette tape (A3).
(2) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed. When the VCR enters the eject mode, repeat steps (1) to (2) again.

## 3.4 Audio circuit

**Notes:**

- ***This adjustment should be done after the “REC color (colour) level adjustment” for the video circuit has been completed.***
- ***GND (Ground) should be taken from the Tuner shield case.***

### 3.4.1 Audio REC FM

| | | |
|---|---|---|
| Signal | (A1)<br>(A2)<br>(A3) | • Ext. input<br>• Audio: No signal<br>• Video: Color (colour) bar signal [NTSC] |
| Mode | (B) | • S-VHS EP |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D) | • TP2253 (A. PB. FM) |
| External trigger | (E) | • TP111 (D.FF) |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 30<br>• Jig code “23” and “20”<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G1)<br>(G2) | • 500 ± 100 mVp-p<br>• More than 350 mVp-p |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Apply the external trigger signal to D.FF (E) to observe the Audio PB FM waveform at the measuring point (D).
(2) Record the signal (A3) with no audio signal input in the mode (B), and play back the recorded signal.
(3) Set the VCR to the manual tracking mode.
(4) If the A.PB FM level is not within the specified value (G1), perform the adjustment in a following procedure.
(5) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(6) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(7) Transmit the code (F4) from the Jig RCU to adjust so that the A.PB FM level of the higher channel level becomes the specified value (G1). (Adjust before recording, then confirm it by playing back.)
(8) If the specified value (G1) is not obtained, transmit the code (F4) from the Jig RCU to adjust so that the waveform level of the lower channel level becomes the specified value (G2). (Adjust before recording, then confirm it by playing back.)
(9) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

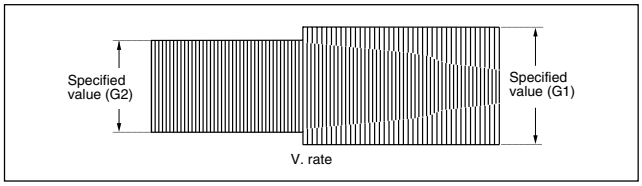



Fig. 3-4-1a Audio REC FM

## 3.5 Demodulator circuit

**Notes:**

- ***Unless otherwise specified in this demod circuit adjustments, all measuring points and adjustment parts are located on the Demod board.***
- ***Unless otherwise specified,set an audio multiplex TV signal generator as follows;***
  ***RF signal : 70 dBμ / 75Ω, color bar 87.5% modulation.***

### 3.5.1 Input level

| | | |
|---|---|---|
| Signal | (A) | • RF signal (Audio: mono 300 Hz) |
| Mode | (B) | • Tuner<br>• EE |
| Equipment | (C) | • Audio level meter |
| Measuring point | (D) | • IC1501 pin 26 |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 20<br>• Jig code “22” and “20”<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • 500 ± 10 mVrms |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Set an audio signal mode of the RF signal generator to mono 300 Hz.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

### 3.5.2 Stereo VCO

| | | |
|---|---|---|
| Signal | (A) | • No signal |
| Mode | (B) | • Tuner<br>• EE |
| Equipment | (C) | • Frequency counter |
| Measuring point | (D1) | • IC1501 pin 26 |
| Short point | (D2) | • C1505(–) terminal |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 21<br>• Jig code “22” and “21”<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • 15.73 ± 0.1 kHz |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

### 3.5.3 Stereo filter

| | | |
|---|---|---|
| Signal | (A) | • RF signal (Audio: No signal) |
| Mode | (B) | • Tuner<br>• EE |
| Equipment | (C) | • Oscilloscope |
| Measuring point | (D) | • IC1501 pin 26 |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 22<br>• Jig code “22” twice<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • Minimum level |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Set an audio signal mode of the RF signal generator to no signal.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

### 3.5.4 Separation - 1

| | | |
|---|---|---|
| Signal | (A) | • RF signal<br>(Audio: L-ch 300 Hz 14% modulated) |
| Mode | (B) | • Tuner<br>• EE |
| Equipment | (C) | • Audio level meter |
| Measuring point | (D) | • IC1501 pin 26 |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 23<br>• Jig code “22” and “23”<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • Minimum level |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 300 Hz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

### 3.5.5 Separation - 2

| | | |
|---|---|---|
| Signal | (A) | • RF signal<br>(Audio: L-ch 5 kHz 14% modulated) |
| Mode | (B) | • Tuner<br>• EE |
| Equipment | (C) | • Audio level meter |
| Measuring point | (D) | • IC1501 pin 26 |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 24<br>• Jig code “22” and “24”<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • Minimum level |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 5 kHz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the level of the measuring point(D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

### 3.5.6 SAP VCO

| | | |
|---|---|---|
| Signal | (A) | • No. signal |
| Mode | (B) | • Tuner<br>• EE |
| Equipment | (C) | • Frequency counter |
| Measuring point | (D1) | • IC1501 pin 26 |
| Short point | (D2) | • C1505 (–) terminal |
| EVR mode<br>EVR address | (F1)<br>(F2)<br>(F3)<br>(F4) | • Jig code “57”<br>• A : 25<br>• Jig code “22” and “25”<br>• Jig code “18” or “19” (Channel +/-) |
| Specified value | (G) | • 78.67 ± 0.5 kHz |
| Adjustment tool | (H) | • Jig RCU [PTU94023B] |

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
(5) Transmit the code (F4) from the Jig RCU to adjust so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

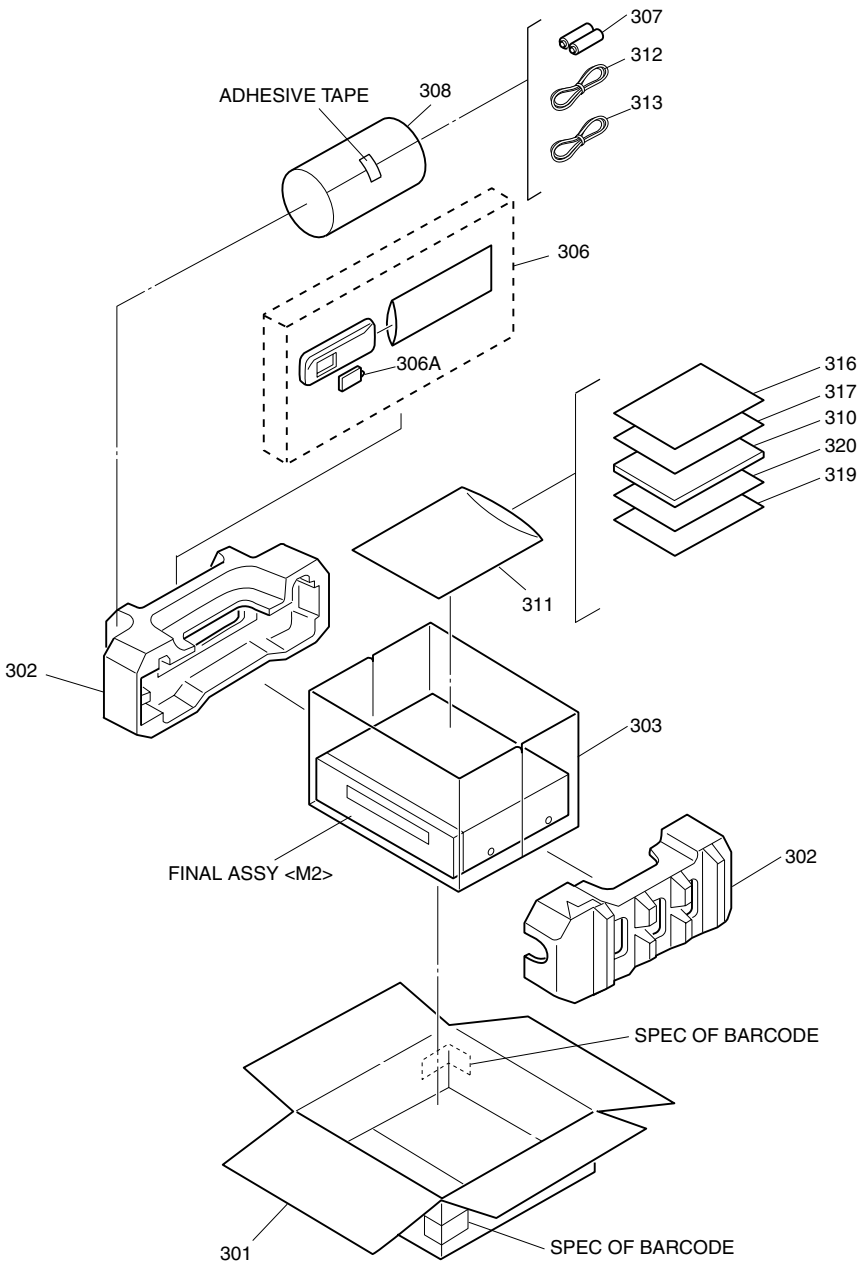
# SECTION 5
# PARTS LIST

## SAFETY PRECAUTION

**Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.**

### 5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

**The instruction manual to be provided with this product will differ according to the destination.**




| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|---|

**********

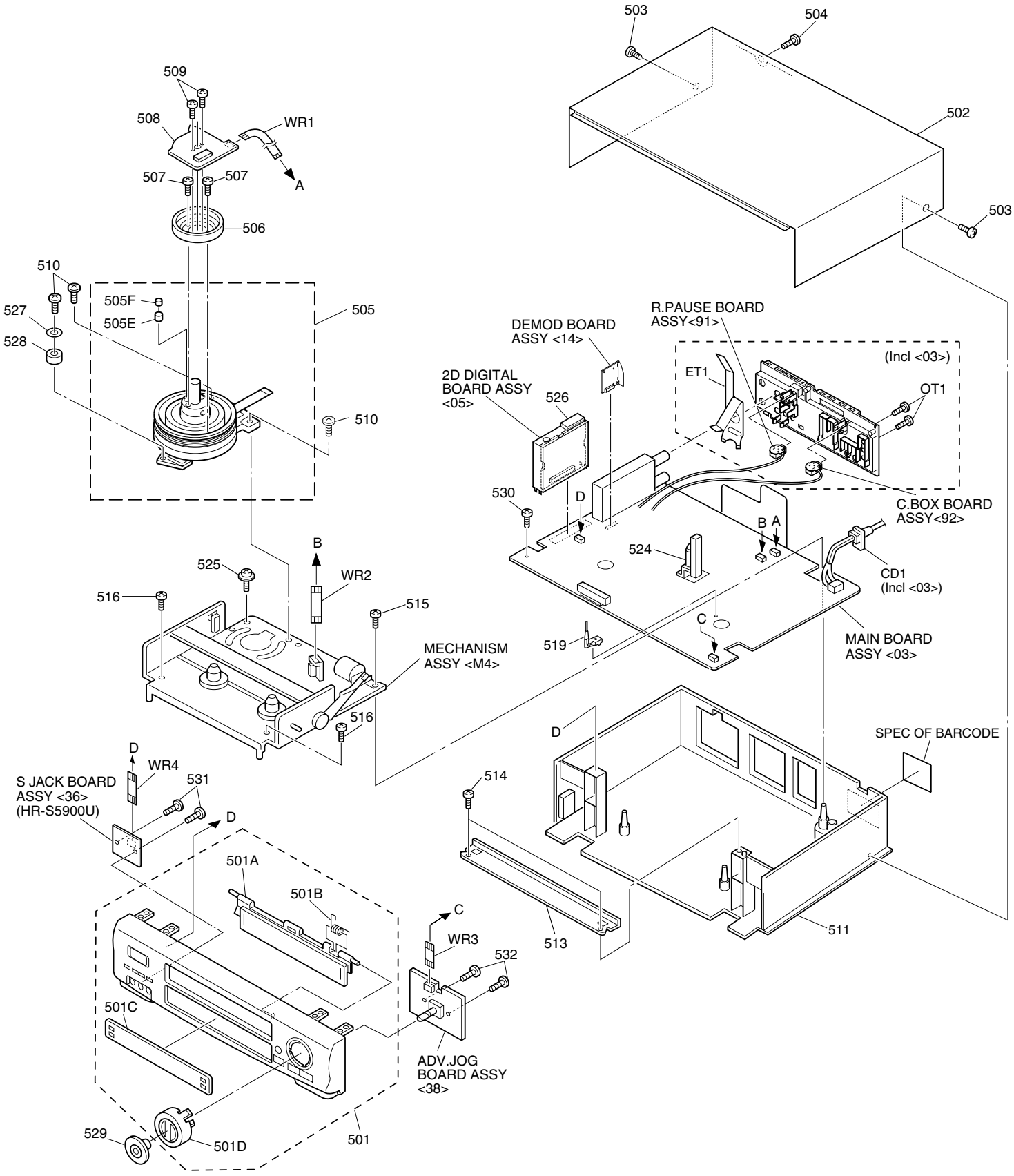
### PACKING AND ACCESSORY ASSEMBLY <M1>

| | | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|---|
| | | 301 | LP30899-001B | PACKING CASE |
| | | 302 | LP30718-001B | CUSHION ASSY |
| | | 303 | PQM30021-93 | POLY BAG |
| | | 306 | LP20303-015A | REMOTE CONTROLLER |
| | | 306A | LP40225-002A | COVER(BATTERY) |
| | | 307 | – | BATTERY,X2("AA" TYPE) |
| | | 308 | QPC02202230P | POLY BAG |
| | ⚠ | 310 | LPT0503-001A | INST.BOOK(EN) |
| | ⚠ | | LPT0503-002A | INST.BOOK(FR),S3900U(C)/S5900U(C) |
| | | 311 | QPC02503530P | POLY BAG |
| | | 312 | PEAC0294-04 | RF CABLE |
| | | 313 | QAM0004-002 | S CABLE |
| | | 316 | BT-52004-1 | WARRANTY CARD,S3900U(C),S5900U(C) |
| | | 317 | BT-51020-2 | REGIST.CARD,S3900U/S5900U |
| | | 319 | BT-20071B | SER.NET CARD,S3900U(C)/S5900U(C) |
| | | 320 | LP30666-002B | SHEET(COUPON) |

## 5.2 FINAL ASSEMBLY <M2>

### BEWARE OF BOGUS PARTS

***Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.***



| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|---|

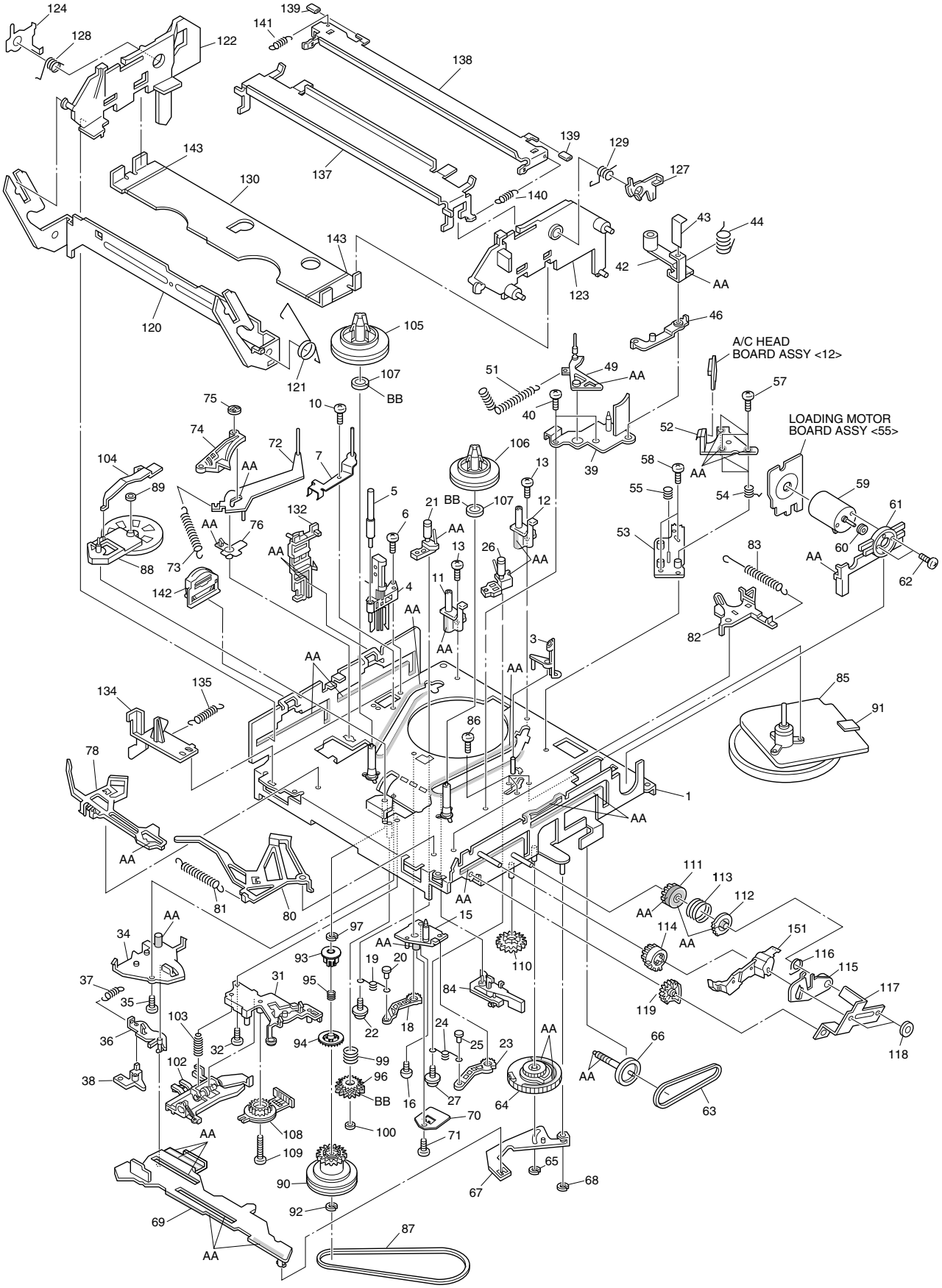
**********

## FINAL ASSEMBLY <M2>

| | | | | |
|---|---|---|---|---|
| | ⚠ | 501 | LP10289-062C | FRONT PANEL ASSY,S5900U/U(C) |
| | ⚠ | | LP10289-063C | FRONT PANEL ASSY,S3900U/U(C) |
| | | 501A | LP20868-005A | CASSETTE DOOR,S5900U/U(C) |
| | | | LP20868-035A | CASSETTE DOOR,S3900U/U(C) |
| | | 501B | PQ46448 | TORSION SPRING |
| | | 501C | LP20869-092A | DISPLAY WINDOW,S5900U/U(C) |
| | | | LP20869-093A | DISPLAY WINDOW,S3900U/U(C) |
| | | 501D | LP21014-001C | ORNAMENT |
| | ⚠ | 502 | LP10013-021D | TOP COVER |
| | | 503 | QYTDSF3010M | SCREW,X2 TOP COVER(SIDE) |
| | | 504 | QYTDSF3010M | SCREW,TOP COVER(REAR) |
| | | 505 | LP20981-010A | DRUM SUB ASSY,S3900U/U(C) |
| | | | LP20981-012A | DRUM SUB ASSY,S5900U/U(C) |
| | | 505E | LP40323-001A | CONTACT |
| | | 505F | LP30004-014A | COMPRESSION SPRING |
| | | 506 | PDZ0179-1-4 | ROTOR ASSY |
| | | 507 | QYSPSP3006Z | SCREW,X2 |
| | ⚠ | 508 | QAR0169-002 | STATOR ASSY |
| | | 509 | QYSPSPH2606Z | SCREW,X2 |
| | | 510 | QYTDST2610Z | SCREW,X3 DRUM |
| | ⚠ | 511 | LP10108-012E | BOTTOM CHASSIS |
| | | 513 | LP30312-001B | BRACKET(CHASSIS) |
| | | 514 | QYTDSF3010Z | SCREW,X2 |
| | | 515 | QYTDSF4012Z | SCREW,MECHA |
| | | 516 | QYTDSF3010Z | SCREW,X2 MECHA |
| | | 519 | LP40407-001A | KNOB ASSY |
| | | 524 | LP40253-001B | STOPPER |
| | | 525 | PQ40413 | SPECIAL SCREW,MECHA |
| | | 526 | LP30002-088B | SPACER,SHIELD FRAME |
| | | 527 | QYWWS267505Z | WASHER |
| | | 528 | LP30017-021A | SPACER |
| | | 529 | LP30954-001A | KNOB ASSY |
| | | 530 | QYTDSF3010Z | SCREW,MAIN |
| | | 531 | QYTDSF2608Z | SCREW,X2 S JACK |
| | | 532 | QYTDSF2608Z | SCREW,X2 JOG |
| | | WR1 | QUQ212-0518CG | FFC WIRE,DRUM CN3002 |
| | | WR2 | WJT0005-002A | E-CARD WIRE,A/C HEAD CN2001 |
| | | WR3 | QUQ112-0914CG | FFC WIRE,FRONT CN7001 |
| | | WR4 | WJT0026-001A | E-CARD WIRE,S(FSA) CN7103,S5900U/U(C) |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|---|

## 5.3 MECHANISM ASSEMBLY <M4>




| Classification | Part No. | Symbol in drawing |
|---|---|---|
| Grease | KYODO-SH-P | AA |
| Oil | COSMO-HV56 | BB |

**NOTE:** The section marked in **AA** and **BB** indicate lubrication and greasing areas.

## MECHANISM ASSEMBLY <M4>

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|---|
| | | 1 | LP20821-006A | MAIN DECK ASSY |
| | | 3 | LP30492-002B | GUIDE POLE GUARD |
| | | 4 | NAH0001-001 | FULL ERASE HEAD |
| | | 5 | LP40098-001B | GUIDE POLE(SUPPLY) |
| | | 6 | QYTDST2608Z | SCREW,FE HEAD |
| | | 7 | LP40637-002A | TENSION STUD BASE ASSY |
| | | 10 | QYTDST2606Z | SCREW |
| | | 11 | LP30409-002C | UV CATCHER 2 |
| | | 12 | LP30409-002C | UV CATCHER 2 |
| | | 13 | QYTPST2606Z | SCREW,X2 |
| | | 15 | LP30223-003C | LOADING ARM GEAR SHAFT |
| | | 16 | QYTDST2606Z | SCREW |
| | | 18 | LP30224-001B | LOADING ARM GEAR(SUPPLY) |
| | | 19 | LP40099-001A | TORSION ARM |
| | | 20 | LP40100-001A | PIN |
| | | 21 | LP40101-006A | POLE BASE ASSY(SUPPLY) |
| | | 22 | QYSPSTG2606Z | SCREW |
| | | 23 | LP40103-002B | LOADING ARM GEAR(TAKE UP) |
| | | 24 | LP40099-001A | TORSION ARM |
| | | 25 | LP40100-001A | PIN |
| | | 26 | LP40104-006A | POLE BASE ASSY(TAKE UP) |
| | | 27 | QYSPSTG2606Z | SCREW |
| | | 31 | LP20233-004B | ROTARY ENCODER GUIDE |
| | | 32 | QYTPST2606Z | SCREW |
| | | 34 | LP30226-004E | CONTROL PLATE GUIDE |
| | | 35 | QYTPST2605Z | SCREW |
| | | 36 | LP30249-003B | TAKE UP LEVER |
| | | 37 | LP30003-006A | TENSION SPRING |
| | | 38 | LP40119-002A | TAKE UP HEAD |
| | | 39 | LP20234-004B | LID GUIDE |
| | | 40 | QYTDST2606Z | SCREW,X2 |
| | | 42 | LP40105-003A | PINCH ROLLER ARM ASSY |
| | | 43 | LP40753-001A | PINCH ROLLER SHEET3 |
| | | 44 | LP40148-002A | TORSION SPRING |
| | | 46 | LP40149-001C | PRESS LEVER ASSY |
| | | 49 | LP40106-007A | GUIDE ARM ASSY |
| | | 51 | LP40134-002A | TENSION SPRING |
| | | 52 | QAH0058-001 | AC HEAD |
| | | 53 | LP30228-001A | HEAD BASE |
| | | 54 | LP30004-013A | COMPRESSION SPRING,X3 |
| | | 55 | LP40236-001A | COMPRESSION SPRING |
| | | 57 | LP40213-002B | SPECIAL SCREW,X3 |
| | | 58 | QYTDST2608Z | SCREW,X2 |
| | | 59 | QAR0023-001 | LOADING MOTOR |
| | | 60 | PQ43546-1-2 | MOTOR PULLEY |
| | | 61 | LP30230-001B | MOTOR GUIDE |
| | | 62 | QYTPSP3003Z | SCREW,X2 |
| | | 63 | LP30005-003A | BELT,LOADING MOTOR |
| | | 64 | LP20791-002D | CONTROL CAM |
| | | 65 | PQM30017-24 | SLIT WASHER |
| | | 66 | LP40120-001A | WORM GEAR |
| | | 67 | LP40107-002A | LINK LEVER ASSY |
| | | 68 | PQM30017-24 | SLIT WASHER |
| | | 69 | LP10201-003E | CONTROL PLATE |
| | | 70 | LP40379-001B | CONTROL BRACKET(1) |
| | | 71 | QYTDSF2608M | SCREW |
| | | 72 | LP40108-002A | TENSION ARM ASSY |
| | | 73 | LP30003-010A | TENSION SPRING |
| | | 74 | LP40109-003D | TENSION BRAKE ASSY |
| | | 75 | PQ46302-1-3 | ADJUST PIN |
| | | 76 | LP30232-002A | TENSION ARM BEARING |
| | | 78 | LP40532-008B | MAIN BRAKE ASSY (SUPPLY) |
| | | 80 | LP40111-011A | MAIN BRAKE ASSY (TAKE UP) |
| | | 81 | LP30003-026A | TENSION SPRING |
| | | 82 | LP40112-001F | SUB BRAKE ASSY(TAKE UP) |
| | | 83 | LP40357-002A | TENSION SPRING |
| | | 84 | LP40461-001A | CAPSTAN BRAKE ASSY |
| | | 85 | QAR0087-005 | CAPSTAN MOTOR |
| | | 86 | QYTDSF2606M | SCREW,X3 |
| | | 87 | LP30005-007A | BELT,CAPSTAN MOTOR |
| | | 88 | LP40114-012A | IDLER ARM ASSY |
| | | 89 | LP40599-001A | WASHER |
| | | 90 | LP40593-001A | CLUTCH UNIT 3 |
| | | 91 | LP30002-097A | SPACER,CAPSTAN MOTOR |
| | | 92 | PQM30017-47 | SLIT WASHER |
| | | 93 | LP30696-002A | CLUTCH GEAR 4 |
| | | 94 | LP30697-003A | COUPLING GEAR |
| | | 95 | LP40554-002A | COMPRESSION SPRING |
| | | 96 | LP40442-001A | DIRECT GEAR |
| | | 97 | LP30017-019A | SPACER |
| | | 99 | LP40483-002A | COMPRESSION SPRING |
| | | 100 | LP30016-001A | SLIT WASHER |
| | | 102 | LP40484-001J | CHANGE LEVER ASSY |
| | | 103 | LP40512-002B | COMPRESSION SPRING |
| | | 104 | LP30236-002C | IDLER LEVER |
| | | 105 | LP20237-001B | REEL DISK (SUPPLY) |
| | | 106 | LP20238-001B | REEL DISK (TAKE UP) |
| | | 107 | LP30017-015A | SPACER,X2 |
| | | 108 | QSW0554-003 | ROTARY ENCODER |
| | | 109 | QYTPST2620Z | SCREW |
| | | 110 | LP30237-002B | CASSETTE GEAR |
| | | 111 | LP30239-002G | LIMIT GEAR(1) |
| | | 112 | LP30240-002G | LIMIT GEAR(2) |
| | | 113 | LP40136-001E | TORSION SPRING |
| | | 114 | LP30242-002A | RELAY GEAR |
| | | 115 | LP30339-002E | OPENER GUIDE |
| | | 116 | LP40545-001A | TORSION SPRING |
| | | 117 | LP40214-001B | C.H.BRACKET |
| | | 118 | PQM30017-47 | SLIT WASHER,X2 |
| | | 119 | LP30243-001D | DRIVE GEAR |
| | | 120 | LP20240-001G | DRIVE ARM |
| | | 121 | LP40137-001A | TORSION SPRING |
| | | 122 | LP10081-002L | SIDE HOLDER(L) |
| | | 123 | LP10082-002M | SIDE HOLDER(R) |
| | | 124 | LP30255-006A | LOCK LEVER(L) |
| | | 127 | LP30256-001H | LOCK LEVER(R) |
| | | 128 | LP40168-003A | TORSION SPRING(L) |
| | | 129 | LP40218-001B | TORSION SPRING(R) |
| | | 130 | LP30257-001G | CASSETTE HOLDER |
| | | 132 | LP30244-002G | GUIDE RAIL |
| | | 134 | LP30245-002F | REC SAFETY LEVER |
| | | 135 | LP30003-004A | TENSION SPRING |
| | | 137 | LP20578-001C | TOP GUIDE |
| | | 138 | LP30500-001C | HOLD PLATE |
| | | 139 | LP40450-003A | PAD,X2 |
| | | 140 | LP30003-025B | TENSION SPRING |
| | | 141 | LP30003-024A | TENSION SPRING |
| | | 142 | LP40481-003A | ROLLER CAM ASSY |
| | | 143 | LP30019-014A | PAD,X2 |
| | | 151 | LP20324-003B | DOOR OPENER |

## 5.4 ELECTRICAL PARTS LIST

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|---|
| ********** | | | | |

### MAIN BOARD ASSEMBLY <03>

| | | | |
|---|---|---|---|
| | | PW1 | LPA10134-03D1 | MAIN BOARD ASSY,S5900U/U(C) |
| | | | LPA10134-05D1 | MAIN BOARD ASSY,S3900U/U(C) |
| | | IC1 | JCP8050-NSA | IC |
| | | | or JCP8050-MSA | IC |
| | | IC501 | JCP8038 | IC |
| | | IC502 | VC2076DP | IC |
| | | IC3001 | MN101D02HWD | IC |
| | | IC3002 | BA6956AN | IC |
| | | IC3003 | IC-PST3440U-X | IC |
| | | IC3004 | S-24C04BFJ-X | IC |
| | | | or X24C04S | IC |
| | | | or 24LC04B/SN-X | IC |
| | | | or AT24C04N-10SC-X | IC |
| | | | or BR24C04F-W-X | IC |
| | | IC5301 | L5431 | IC |
| | | | or MM1431AT | IC |
| | | IC7001 | PT6312LQ | IC |
| | | | or UPD16312GB/H/ | IC |
| | | IC7003 | GP1U291Q | IR DETECT UNIT |
| | | | or PIC-28143LJ | IR DETECT UNIT |
| | | | or PIC-37143LJ | IR DETECT UNIT |
| | | | or PNA4652M00YC | IR DETECT UNIT |
| | | Q1 | 2SC4081/S/-X | TRANSISTOR,S3900U/U(C) |
| | | Q2 | 2SC4081/S/-X | TRANSISTOR,S3900U/U(C) |
| | | Q3 | 2SC4081/S/-X | TRANSISTOR,S3900U/U(C) |
| | | Q4 | 2SC4081/S/-X | TRANSISTOR,S3900U/U(C) |
| | | Q7 | 2SC4081/QRS/-X | TRANSISTOR |
| | | | or 2PC4081/R/-X | TRANSISTOR |
| | | Q8 | 2SC4081/QRS/-X | TRANSISTOR |
| | | | or 2PC4081/R/-X | TRANSISTOR |
| | | Q9 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | Q12 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | Q17 | DTC144WU | TRANSISTOR |
| | | | or PDTC144WU | TRANSISTOR |
| | | | or RN1309 | TRANSISTOR |
| | | | or UN521E | TRANSISTOR |
| | | Q21 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | Q33 | DTC144WU | TRANSISTOR |
| | | | or PDTC144WU | TRANSISTOR |
| | | | or UN521E | TRANSISTOR |
| | | | or RN1309 | TRANSISTOR |
| | | Q38 | 2SC4081/QRS/-X | TRANSISTOR |
| | | | or 2PC4081/R/-X | TRANSISTOR |
| | | Q401 | 2SA1576A/QR/-X | TRANSISTOR,S5900U/U(C) |
| | | Q402 | 2SA1576A/QR/-X | TRANSISTOR,S5900U/U(C) |
| | | Q403 | DTC144WU | TRANSISTOR,S5900U/U(C) |
| | | | or PDTC144WU | TRANSISTOR,S5900U/U(C) |
| | | | or RN1309 | TRANSISTOR,S5900U/U(C) |
| | | | or UN521E | TRANSISTOR,S5900U/U(C) |
| | | Q404 | DTC144WU | TRANSISTOR,S5900U/U(C) |
| | | | or PDTC144WU | TRANSISTOR,S5900U/U(C) |
| | | | or RN1309 | TRANSISTOR,S5900U/U(C) |
| | | | or UN521E | TRANSISTOR,S5900U/U(C) |
| | | Q405 | 2SA1576A/QR/-X | TRANSISTOR,S5900U/U(C) |
| | | Q901 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | Q903 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | Q904 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | Q2001 | 2SC4081/QRS/-X | TRANSISTOR |
| | | | or 2SD1819A/QRS/-X | TRANSISTOR |
| | | | or 2PC4081/R/-X | TRANSISTOR |
| | | Q2002 | 2SC4081/QRS/-X | TRANSISTOR |
| | | | or 2PC4081/R/-X | TRANSISTOR |
| | | | or 2SD1819A/QRS/-X | TRANSISTOR |
| | | Q2003 | DTA144WU | TRANSISTOR |
| | | | or PDTA144WU | TRANSISTOR |
| | | | or RN2309 | TRANSISTOR |
| | | | or UN511E | TRANSISTOR |
| | | Q2051 | 2SC4081/QRS/-X | TRANSISTOR |
| | | | or 2PC4081/R/-X | TRANSISTOR |
| | | | or 2SD1819A/QRS/-X | TRANSISTOR |
| | | Q2052 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2SB1218A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | Q2053 | DTC144WU | TRANSISTOR |
| | | | or PDTC144WU | TRANSISTOR |
| | | | or RN1309 | TRANSISTOR |
| | | | or UN521E | TRANSISTOR |
| | | Q2054 | 2SA1576A/QR/-X | TRANSISTOR |
| | | | or 2PA1576/R/-X | TRANSISTOR |
| | | | or 2SB1218A/QR/-X | TRANSISTOR |
| | | Q2055 | DTC144WU | TRANSISTOR |
| | | | or PDTC144WU | TRANSISTOR |
| | | | or RN1309 | TRANSISTOR |
| | | | or UN521E | TRANSISTOR |
| | | Q2061 | 2SC4081/QRS/-X | TRANSISTOR,S5900U/U(C) |
| | | | or 2PC4081/R/-X | TRANSISTOR,S5900U/U(C) |
| | | | or 2SD1819A/QRS/-X | TRANSISTOR,S5900U/U(C) |
| | | Q2062 | 2SA1576A/QR/-X | TRANSISTOR,S5900U/U(C) |
| | | | or 2PA1576/R/-X | TRANSISTOR,S5900U/U(C) |
| | | | or 2SB1218A/QR/-X | TRANSISTOR,S5900U/U(C) |
| | | Q2063 | DTC144WU | TRANSISTOR,S5900U/U(C) |
| | | | or PDTC144WU | TRANSISTOR,S5900U/U(C) |
| | | | or RN1309 | TRANSISTOR,S5900U/U(C) |
| | | | or UN521E | TRANSISTOR,S5900U/U(C) |
| | | Q2251 | DTA144WU | TRANSISTOR |
| | | | or PDTA144WU | TRANSISTOR |
| | | | or RN2309 | TRANSISTOR |
| | | | or UN511E | TRANSISTOR |
| | | Q3002 | PTZ-NV16 | PHOTO TRANSISTO |
| | | | or PTZ-NV16A | PHOTO TRANSISTO |
| | | Q3005 | UN521K | TRANSISTOR |
| | | | or DTC114WU | TRANSISTOR |
| | | Q4001 | UN5211 | TRANSISTOR |
| | | | or DTC114EU | TRANSISTOR |
| | | | or RN1302 | TRANSISTOR |
| | | | or PDTC114EU | TRANSISTOR |
| | | Q4002 | 2SD1819A/QRS/-X | TRANSISTOR |
| | | | or 2SC4081/QRS/-X | TRANSISTOR |
| | | | or 2PC4081/R/-X | TRANSISTOR |
| | | Q5101 | 2SK2043-CB14 | FE TRANSISTOR |
| | | | or 2SK2043 | FE TRANSISTOR |
| | | | or 2SK2324-LT | POWER MOS FET |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | | or 2SK2324 | POWER MOS FET | |
| | | Q5102 | 2SD2144S/UV/-T | TRANSISTOR | |
| | | Q5302 | 2SD2375/QP/ | TRANSISTOR | |
| | | Q5303 | 2SD1819A/RS/-X | TRANSISTOR | |
| | | | or 2SC4081/RS/-X | TRANSISTOR | |
| | | | or 2PC4081/R/-X | TRANSISTOR | |
| | | Q5304 | 2SD2144S/UV/-T | TRANSISTOR | |
| | | Q5305 | DTA114EU | TRANSISTOR | |
| | | | or PDTA114EU | TRANSISTOR | |
| | | | or RN2302 | TRANSISTOR | |
| | | | or UN5111 | TRANSISTOR | |
| | | Q5306 | DTC114EU | TRANSISTOR | |
| | | | or PDTC114EU | TRANSISTOR | |
| | | | or UN5211 | TRANSISTOR | |
| | | | or RN1302 | TRANSISTOR | |
| | | Q6030 | 2SB1218A/QR/-X | TRANSISTOR | |
| | | | or 2SA1576A/QR/-X | TRANSISTOR | |
| | | | or 2PA1576/R/-X | TRANSISTOR | |
| | | Q6551 | 2SC1740S/QRS/-T | TRANSISTOR | |
| | | | or 2SC3199/YG/-T | TRANSISTOR | |
| | | | or KTC3199/YG/-T | TRANSISTOR | |
| | | Q7201 | 2SA720/RS/-T | TRANSISTOR | |
| | | D1 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D2 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D12 | 1SS270A | DIODE | |
| | | | or 1SS133 | DIODE | |
| | | D2202 | MTZJ9.1B | ZENER DIODE | |
| | | D3001 | LNB2301L01VI | LE DIODE | |
| | | D3002 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D3005 | 11ES2 | DIODE | |
| | | D3007 | 1SS355 | DIODE | |
| | | D3013 | DA204U | DIODE | |
| | | D5001 | S1WB/A/60-4102 | BRIDGE DIODE | |
| | | | or S1WB/A/60-X | BRIDGE DIODE | |
| | | | or S1WB(A)60F4072X | BRIDGE DIODE | |
| | | D5101 | AU01 | FR DIODE | |
| | | | or ERA18-04-T2 | FR DIODE | |
| | | | or 10ELS4 | FR DIODE | |
| | | | or 1SR153-400-T2 | FR DIODE | |
| | | D5102 | AU01 | FR DIODE | |
| | | | or ERA18-04-T2 | FR DIODE | |
| | | | or 1SR153-400-T2 | FR DIODE | |
| | | | or 10ELS4 | FR DIODE | |
| | | D5103 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D5201 | AU01Z | FR DIODE | |
| | | | or 10ELS2 | FR DIODE | |
| | | D5203 | AU01Z | FR DIODE | |
| | | | or 10ELS2 | FR DIODE | |
| | | D5204 | AU01Z | FR DIODE | |
| | | | or 10ELS2 | FR DIODE | |
| | | D5206 | FMB-24 | BARRIER DIODE | |
| | | | or FSQ05A04B | SB DIODE | |
| | | | or SB640FCT | SB DIODE | |
| | | | or YG801C04 | SB DIODE | |
| | | | or SF5SC4 | SB DIODE | |
| | | D5210 | AU01Z | FR DIODE | |
| | | | or ERA18-02-T2 | FR DIODE | |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | | or 10ELS2 | FR DIODE | |
| | | | or 1SR153-400-T2 | FR DIODE | |
| | | | or PG104RS | FR DIODE | |
| | | D5211 | AU01Z | FR DIODE | |
| | | | or ERA18-02-T2 | FR DIODE | |
| | | | or PG104RS | FR DIODE | |
| | | | or 10ELS2 | FR DIODE | |
| | | | or 1SR153-400-T2 | FR DIODE | |
| | | D5301 | MTZJ15C | ZENER DIODE | |
| | | | or RD15ES/B3/-T2 | ZENER DIODE | |
| | | D5302 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | D5303 | RD5.1JS/B2/-T2 | ZENER DIODE | |
| | | | or MA4051N/M/-T2 | ZENER DIODE | |
| | | D5304 | 1SS355 | DIODE | |
| | | D5307 | QUY153-050Y | IM BUS WIRE | |
| | | D5309 | MTZJ27C | ZENER DIODE | |
| | | | or RD27ES/B3/-T2 | ZENER DIODE | |
| | | D5310 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D6002 | HZ30-2L-T2 | ZENER DIODE | |
| | | | or HZ30-2LTD | Z DIODE (M) | |
| | | D6551 | MTZJ10B | ZENER DIODE | |
| | | D7001 | RD9.1ES/B2/-T2 | ZENER DIODE | |
| | | | or UZ9.1BSB | ZENER DIODE | |
| | | | or MTZJ9.1B | ZENER DIODE | |
| | | D7003 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D7004 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D7005 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D7006 | 1SS133 | DIODE | |
| | | | or 1SS270A | DIODE | |
| | | D7008 | SLR-325MC-T | LE DIODE | |
| | | D7009 | SLR-325VC-T | LE DIODE | |
| | | R1 | NRVA02D-622X | CMF RESISTOR | 6.2kΩ,1/10W |
| | | R2 | NRVA02D-152X | CMF RESISTOR | 1.5kΩ,1/10W |
| | | R3 | NRSA02J-152X | MG RESISTOR | 1.5kΩ,1/10W |
| | | R6 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R7 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R8 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R9 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R12 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R21 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R22 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R25 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R26 | NRSA02J-822X | MG RESISTOR | 8.2kΩ,1/10W |
| | | R27 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R28 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R29 | NRSA02J-222X | MG RESISTOR | 2.2kΩ,1/10W |
| | | R30 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R31 | NRSA02J-122X | MG RESISTOR | 1.2kΩ,1/10W |
| | | R32 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R33 | NDC21HJ-7R0X | CAPACITOR | 7pF,50V |
| | | R34 | NDC21HJ-270X | CAPACITOR | 27pF,50V |
| | | R36 | NRSA02J-182X | MG RESISTOR | 1.8kΩ,1/10W |
| | | R39 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R42 | NRSA02J-681X | MG RESISTOR | 680Ω,1/10W |
| | | R44 | NRSA02J-223X | MG RESISTOR | 22kΩ,1/10W |
| | | R45 | NRSA02J-333X | MG RESISTOR | 33kΩ,1/10W |
| | | R46 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | R48 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R68 | NRSA02J-222X | MG RESISTOR | 2.2kΩ,1/10W |
| | | R77 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R90 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R92 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R93 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R104 | NRSA02J-682X | MG RESISTOR | 6.8kΩ,1/10W |
| | | R118 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R120 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R201 | NRSA02J-332X | MG RESISTOR | 3.3kΩ,1/10W |
| | | R202 | NRSA02J-222X | MG RESISTOR | 2.2kΩ,1/10W |
| | | R401 | NRSA02J-221X | MG RESISTOR,S5900U/U(C) | 220Ω,1/10W |
| | | R402 | NRSA02J-102X | MG RESISTOR,S5900U/U(C) | 1kΩ,1/10W |
| | | R403 | NRSA02J-391X | MG RESISTOR,S5900U/U(C) | 390Ω,1/10W |
| | | R404 | NRSA02J-473X | MG RESISTOR,S5900U/U(C) | 47kΩ,1/10W |
| | | R405 | NRSA02J-683X | MG RESISTOR,S5900U/U(C) | 68kΩ,1/10W |
| | | R407 | NRSA02J-472X | MG RESISTOR,S5900U/U(C) | 4.7kΩ,1/10W |
| | | R408 | NRSA02J-473X | MG RESISTOR,S5900U/U(C) | 47kΩ,1/10W |
| | | R503 | NRSA02J-221X | MG RESISTOR | 220Ω,1/10W |
| | | R504 | NRSA02J-332X | MG RESISTOR | 3.3kΩ,1/10W |
| | | R505 | NRSA02J-392X | MG RESISTOR | 3.9kΩ,1/10W |
| | | R506 | NRSA02J-391X | MG RESISTOR | 390Ω,1/10W |
| | | R507 | NRSA02J-122X | MG RESISTOR | 1.2kΩ,1/10W |
| | | R508 | NRSA02J-151X | MG RESISTOR | 150Ω,1/10W |
| | | R509 | NRSA02J-162X | MG RESISTOR | 1.6kΩ,1/10W |
| | | R510 | NRVA02D-102X | CMF RESISTOR | 1kΩ,1/10W |
| | | R511 | NRVA02D-471X | CMF RESISTOR | 470Ω,1/10W |
| | | R512 | NRVA02D-102X | CMF RESISTOR | 1kΩ,1/10W |
| | | R513 | NRVA02D-152X | CMF RESISTOR | 1.5kΩ,1/10W |
| | | R514 | NRVA02D-332X | CMF RESISTOR | 3.3kΩ,1/10W |
| | | R515 | NRVA02D-332X | CMF RESISTOR | 3.3kΩ,1/10W |
| | | R901 | NRSA02J-820X | MG RESISTOR | 82Ω,1/10W |
| | | R902 | NRSA02J-152X | MG RESISTOR | 1.5kΩ,1/10W |
| | | R904 | QRE123J-331X | RESISTOR | 330Ω,1/2W |
| | | R905 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R911 | NRSA02J-750X | MG RESISTOR | 75Ω,1/10W |
| | | R912 | NRSA02J-750X | MG RESISTOR | 75Ω,1/10W |
| | | R914 | NRSA02J-750X | MG RESISTOR | 75Ω,1/10W |
| | | R915 | NRSA02J-750X | MG RESISTOR | 75Ω,1/10W |
| | | R916 | NRSA02J-750X | MG RESISTOR | 75Ω,1/10W |
| | | R917 | NRSA02J-750X | MG RESISTOR | 75Ω,1/10W |
| | | R919 | QRE123J-331X | RESISTOR | 330Ω,1/2W |
| | | R920 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R921 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R922 | QRE123J-331X | RESISTOR | 330Ω,1/2W |
| | | R924 | NRSA02J-750X | MG RESISTOR,S5900U/U(C) | 75Ω,1/10W |
| | | R925 | NRSA02J-750X | MG RESISTOR,S5900U/U(C) | 75Ω,1/10W |
| | | R2001 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R2003 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R2004 | NRSA02J-332X | MG RESISTOR | 3.3kΩ,1/10W |
| | | R2005 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R2006 | NRSA02J-393X | MG RESISTOR | 39kΩ,1/10W |
| | | R2007 | NRSA02J-393X | MG RESISTOR | 39kΩ,1/10W |
| | | R2009 | NRSA02J-123X | MG RESISTOR | 12kΩ,1/10W |
| | | R2010 | NRSA02J-123X | MG RESISTOR | 12kΩ,1/10W |
| | | R2013 | NRSA02J-682X | MG RESISTOR | 6.8kΩ,1/10W |
| | | R2014 | NRSA02J-224X | MG RESISTOR | 220kΩ,1/10W |
| | | R2015 | NRSA02J-181X | MG RESISTOR | 180Ω,1/10W |
| | | R2016 | NRSA02J-473X | MG RESISTOR | 47kΩ,1/10W |
| | | R2017 | NRSA02J-153X | MG RESISTOR | 15kΩ,1/10W |
| | | R2018 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R2019 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R2053 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R2054 | NRSA02J-123X | MG RESISTOR,S3900U/U(C) | 12kΩ,1/10W |
| | | | NRSA02J-153X | MG RESISTOR,S5900U/U(C) | 15kΩ,1/10W |
| | | R2055 | NRSA02J-3R3X | MG RESISTOR | 3.3Ω,1/10W |
| | | R2056 | QRE141J-820Y | RESISTOR,S3900U/U(C) | 82Ω,1/4W |
| | | | QRE141J-101Y | RESISTOR,S5900U/U(C) | 100Ω,1/4W |
| | | R2057 | NRSA02J-473X | MG RESISTOR | 47kΩ,1/10W |
| | | R2058 | NRSA02J-183X | MG RESISTOR | 18kΩ,1/10W |
| | | R2059 | NRSA02J-473X | MG RESISTOR | 47kΩ,1/10W |
| | | R2060 | NRSA02J-183X | MG RESISTOR | 18kΩ,1/10W |
| | | R2061 | NRSA02J-273X | MG RESISTOR,S5900U/U(C) | 27kΩ,1/10W |
| | | R2062 | NRSA02J-3R3X | MG RESISTOR,S5900U/U(C) | 3.3Ω,1/10W |
| | | R2063 | NRSA02J-151X | MG RESISTOR,S5900U/U(C) | 150Ω,1/10W |
| | | R2064 | NRSA02J-473X | MG RESISTOR,S5900U/U(C) | 47kΩ,1/10W |
| | | R2065 | NRSA02J-183X | MG RESISTOR,S5900U/U(C) | 18kΩ,1/10W |
| | | R2201 | NRSA02J-680X | MG RESISTOR | 68Ω,1/10W |
| | | R2204 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R2205 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R2206 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R2207 | NRSA02J-332X | MG RESISTOR | 3.3kΩ,1/10W |
| | | R2217 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R2218 | NRSA02J-393X | MG RESISTOR | 39kΩ,1/10W |
| | | R2219 | NRSA02J-393X | MG RESISTOR | 39kΩ,1/10W |
| | | R2223 | NRSA02J-123X | MG RESISTOR | 12kΩ,1/10W |
| | | R2224 | NRSA02J-123X | MG RESISTOR | 12kΩ,1/10W |
| | | R2232 | NRSA02J-680X | MG RESISTOR | 68Ω,1/10W |
| | | R2251 | QRE141J-102Y | RESISTOR | 1kΩ,1/4W |
| | | R3003 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3005 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3008 | QUY160-100Y | IM BUS WIRE,S5900U/U(C) | |
| | | R3013 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R3017 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3018 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3021 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3022 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3028 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3035 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3043 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R3058 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3060 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3078 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3088 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3090 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3094 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3095 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R3096 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3097 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3098 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3099 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R3201 | NRSA02J-332X | MG RESISTOR | 3.3kΩ,1/10W |
| | | R3206 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3207 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3208 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3209 | QRE141J-181Y | RESISTOR | 180Ω,1/4W |
| | | R3211 | NRSA02J-183X | MG RESISTOR | 18kΩ,1/10W |
| | | R3212 | NRSA02J-181X | MG RESISTOR | 180Ω,1/10W |
| | | R3213 | NRSA02J-273X | MG RESISTOR | 27kΩ,1/10W |
| | | R3214 | NRSA02J-181X | MG RESISTOR | 180Ω,1/10W |
| | | R3215 | NRSA02J-273X | MG RESISTOR | 27kΩ,1/10W |
| | | R3216 | QRE141J-474Y | RESISTOR | 470kΩ,1/4W |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | R3217 | NRSA02J-334X | MG RESISTOR | 330kΩ,1/10W |
| | | R3218 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3219 | QRE141J-103Y | RESISTOR | 10kΩ,1/4W |
| | | R3220 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3221 | NRSA02J-562X | MG RESISTOR | 5.6kΩ,1/10W |
| | | R3222 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R3223 | NRSA02J-105X | MG RESISTOR | 1MΩ,1/10W |
| | | R3224 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R3226 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R3227 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R3236 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3237 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3238 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3240 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3241 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R3242 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R3243 | QRE141J-103Y | RESISTOR | 10kΩ,1/4W |
| | | R3244 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R4001 | NRSA02J-222X | MG RESISTOR | 2.2kΩ,1/10W |
| | | R4002 | NRSA02J-562X | MG RESISTOR | 5.6kΩ,1/10W |
| | | R4003 | NRSA02J-222X | MG RESISTOR | 2.2kΩ,1/10W |
| | | R4006 | NRSA02J-272X | MG RESISTOR | 2.7kΩ,1/10W |
| | | R4010 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R4011 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R4012 | NRSA02J-153X | MG RESISTOR | 15kΩ,1/10W |
| | | R4018 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R4019 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R4020 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R4021 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R4024 | QRE141J-103Y | RESISTOR | 10kΩ,1/4W |
| | ⚠ | R5001 | QRZ9046-475Z | RESISTOR | 4.7MΩ,1/2W |
| | | R5101 | QRE141J-224Y | RESISTOR | 220kΩ,1/4W |
| | | R5102 | QRE141J-224Y | RESISTOR | 220kΩ,1/4W |
| | | R5103 | QRE141J-683Y | RESISTOR | 68kΩ,1/4W |
| | | R5104 | QRG02GJ-683 | OMF RESISTOR | 68kΩ,2W |
| | | R5106 | QRT01DJ-R39X | MF RESISTOR | 0.39Ω,1W |
| | | R5107 | QRE121J-331Y | RESISTOR | 330Ω,1/2W |
| | | R5108 | NRSA02J-122X | MG RESISTOR | 1.2kΩ,1/10W |
| | | R5109 | NRSA02J-681X | MG RESISTOR | 680Ω,1/10W |
| | | R5110 | NRSA02J-224X | MG RESISTOR | 220kΩ,1/10W |
| | | R5301 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R5302 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R5303 | NRSA02J-122X | MG RESISTOR | 1.2kΩ,1/10W |
| | | R5304 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R5305 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R5306 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R5308 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R5309 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R5310 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R5311 | NRSA02J-473X | MG RESISTOR | 47kΩ,1/10W |
| | | R5312 | NRVA02D-332X | CMF RESISTOR | 3.3kΩ,1/10W |
| | | R5313 | NRVA02D-362X | CMF RESISTOR | 3.6kΩ,1/10W |
| | | R5314 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R5316 | NRVA02D-822X | CMF RESISTOR | 8.2kΩ,1/10W |
| | ⚠ | R5318 | QRZ9005-221X | FUSI RESISTOR | 220Ω,1/4W |
| | | R5326 | QUY153-050Y | IM BUS WIRE | |
| | | R5332 | QRE141J-222Y | RESISTOR | 2.2kΩ,1/4W |
| | | R6020 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R6021 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R6030 | NRSA02J-332X | MG RESISTOR | 3.3kΩ,1/10W |
| | | R6031 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | R6032 | NRSA02J-123X | MG RESISTOR | 12kΩ,1/10W |
| | | R6050 | QRE141J-330Y | RESISTOR | 33Ω,1/4W |
| | | R6051 | QRE141J-102Y | RESISTOR | 1kΩ,1/4W |
| | | R6508 | QUY153-050Y | IM BUS WIRE | |
| | | R6510 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R6551 | NRSA02J-271X | MG RESISTOR | 270Ω,1/10W |
| | | R6552 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R7001 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R7002 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R7003 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R7004 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R7005 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R7006 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R7007 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R7008 | NRSA02J-563X | MG RESISTOR | 56kΩ,1/10W |
| | | R7009 | QRE141J-103Y | RESISTOR | 10kΩ,1/4W |
| | | R7010 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R7011 | NRSA02J-333X | MG RESISTOR | 33kΩ,1/10W |
| | | R7012 | QRE141J-333Y | RESISTOR | 33kΩ,1/4W |
| | | R7013 | NRSA02J-333X | MG RESISTOR | 33kΩ,1/10W |
| | | R7014 | NRSA02J-333X | MG RESISTOR | 33kΩ,1/10W |
| | | R7015 | NRSA02J-472X | MG RESISTOR | 4.7kΩ,1/10W |
| | | R7016 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R7017 | NRSA02J-331X | MG RESISTOR | 330Ω,1/10W |
| | | R7018 | NRSA02J-331X | MG RESISTOR | 330Ω,1/10W |
| | | R7022 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R7026 | QUY160-100Y | IM BUS WIRE | |
| | | R7035 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R7202 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R7203 | NRSA02J-222X | MG RESISTOR | 2.2kΩ,1/10W |
| | | R7204 | QRE123J-100X | RESISTOR | 10Ω,1/2W |
| | | B3 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B6 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B8 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B11 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B33 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B43 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B2051 | QUY153-050Y | IM BUS WIRE,S3900U/U(C) | |
| | | B3001 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B5301 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B5303 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B5304 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B5308 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B6020 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B6550 | QUY160-080Y | IM BUS WIRE | |
| | | B6551 | QUY160-080Y | IM BUS WIRE | |
| | | B7002 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7003 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7004 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7005 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7006 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7007 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7013 | QUY160-060Y | IM BUS WIRE | |
| | | B7020 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7022 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C1 | NCB21HK-103X | CAPACITOR,S3900U/U(C) | 0.01μF,50V |
| | | | NCF21CZ-105X | CAPACITOR,S5900U/U(C) | 1μF,16V |
| | | C2 | NCB21HK-103X | CAPACITOR,S3900U/U(C) | 0.01μF,50V |
| | | | NCF21CZ-105X | CAPACITOR,S5900U/U(C) | 1μF,16V |
| | | C3 | NCB21HK-103X | CAPACITOR,S3900U/U(C) | 0.01μF,50V |
| | | | NCF21CZ-105X | CAPACITOR,S5900U/U(C) | 1μF,16V |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | C4 | NCB21HK-103X | CAPACITOR,S3900U/U(C) | 0.01µF,50V |
| | | | NCF21CZ-105X | CAPACITOR,S5900U/U(C) | 1µF,16V |
| | | C5 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C7 | NDC21HJ-151X | CAPACITOR | 150pF,50V |
| | | C8 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C9 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C10 | NDC21HG-151X | CAPACITOR | 150pF,50V |
| | | C11 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C12 | NDC21HJ-7R0X | CAPACITOR | 7pF,50V |
| | | C14 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C15 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C16 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C17 | QEKJ1HM-335 | E CAPACITOR | 3.3µF,50V |
| | | C19 | QEKJ0JM-336 | E CAPACITOR | 33µF,6.3V |
| | | C20 | QEKJ1HM-105 | E CAPACITOR | 1µF,50V |
| | | C21 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C22 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C23 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C24 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C25 | NDC21HJ-4R0X | CAPACITOR | 4pF,50V |
| | | C26 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C27 | NCB21HK-223X | CAPACITOR | 0.022µF,50V |
| | | C28 | QEKJ1HM-335 | E CAPACITOR | 3.3µF,50V |
| | | C29 | NCB21HK-472X | CAPACITOR | 0.0047µF,50V |
| | | C30 | QEKJ1HM-474 | E CAPACITOR | 0.47µF,50V |
| | | C31 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C32 | QCBB1HK-103 | CAPACITOR | 0.01µF,50V |
| | | C33 | QEKJ1HM-225 | E CAPACITOR | 2.2µF,50V |
| | | C34 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C35 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C36 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C37 | QEKJ1HM-105 | E CAPACITOR | 1µF,50V |
| | | C38 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C39 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C40 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C54 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C57 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C59 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C60 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C61 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C63 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C64 | NDC21HJ-120X | CAPACITOR | 12pF,50V |
| | | C69 | NCB21HK-103X | CAPACITOR,S3900U/U(C) | 0.01µF,50V |
| | | C70 | NCB21HK-103X | CAPACITOR,S3900U/U(C) | 0.01µF,50V |
| | | C71 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C72 | NDC21HJ-470X | CAPACITOR | 47pF,50V |
| | | C73 | NDC21HJ-120X | CAPACITOR | 12pF,50V |
| | | C74 | NDC21HJ-120X | CAPACITOR | 12pF,50V |
| | | C80 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C84 | NRSA02J-822X | MG RESISTOR | 8.2kΩ,1/10W |
| | | C106 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C110 | NCB21HK-331X | CAPACITOR | 330pF,50V |
| | | C137 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C201 | QEKJ0JM-107 | E CAPACITOR | 100µF,6.3V |
| | | C202 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C203 | QEKJ1HM-105 | E CAPACITOR | 1µF,50V |
| | | C205 | NDC21HJ-101X | CAPACITOR | 100pF,50V |
| | | C207 | NCF21CZ-105X | CAPACITOR | 1µF,16V |
| | | C220 | NDC21HJ-101X | CAPACITOR | 100pF,50V |
| | | C401 | NCB21HK-103X | CAPACITOR,S5900U/U(C) | 0.01µF,50V |
| | | C402 | NCB21HK-223X | CAPACITOR,S5900U/U(C) | 0.022µF,50V |
| | | C403 | NDC21HJ-151X | CAPACITOR,S5900U/U(C) | 150pF,50V |
| | | C404 | NDC21HJ-470X | CAPACITOR,S5900U/U(C) | 47pF,50V |
| | | C406 | NCB21HK-681X | CAPACITOR,S5900U/U(C) | 680pF,50V |
| | | C407 | NDC21HJ-180X | CAPACITOR,S5900U/U(C) | 18pF,50V |
| | | C501 | QEKJ1HM-225 | E CAPACITOR | 2.2µF,50V |
| | | C502 | QEKJ1HM-104 | E CAPACITOR | 0.1µF,50V |
| | | C503 | QEKJ1HM-225 | E CAPACITOR | 2.2µF,50V |
| | | C504 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C505 | QEKJ1EM-475 | E CAPACITOR | 4.7µF,25V |
| | | C506 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C507 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C508 | QEKJ1HM-474 | E CAPACITOR | 0.47µF,50V |
| | | C509 | QEKJ1CM-106 | E CAPACITOR | 10µF,16V |
| | | C510 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C511 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C512 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C513 | QEKJ1EM-475 | E CAPACITOR | 4.7µF,25V |
| | | C514 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C515 | QCBB1HK-103 | CAPACITOR | 0.01µF,50V |
| | | C516 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C517 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C518 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C519 | QERF1HM-225 | E CAPACITOR | 2.2µF,50V |
| | | C520 | QERF1EM-475 | E CAPACITOR | 4.7µF,25V |
| | | C521 | QEKJ1EM-475 | E CAPACITOR | 4.7µF,25V |
| | | C522 | QEKJ1HM-225 | E CAPACITOR | 2.2µF,50V |
| | | C523 | QEKJ1HM-225 | E CAPACITOR | 2.2µF,50V |
| | | C524 | NDC21HG-301X | CAPACITOR | 300pF,50V |
| | | C525 | NDC21HG-301X | CAPACITOR | 300pF,50V |
| | | C526 | NDC21HJ-101X | CAPACITOR | 100pF,50V |
| | | C527 | NDC21HJ-181X | CAPACITOR | 180pF,50V |
| | | C528 | NDC21HG-271X | CAPACITOR | 270pF,50V |
| | | C529 | NDC21HG-820X | CAPACITOR | 82pF,50V |
| | | C530 | NDC21HG-221X | CAPACITOR | 220pF,50V |
| | | C531 | NDC21HG-301X | CAPACITOR | 300pF,50V |
| | | C532 | NDC21HG-301X | CAPACITOR | 300pF,50V |
| | | C533 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C534 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C535 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C551 | QERF1HM-105 | E CAPACITOR | 1µF,50V |
| | | C552 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C553 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C555 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C557 | QERF1HM-105 | E CAPACITOR,S5900U/U(C) | 1µF,50V |
| | | C558 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C559 | NCB21HK-103X | CAPACITOR,S5900U/U(C) | 0.01µF,50V |
| | | C560 | QERF1HM-105 | E CAPACITOR | 1µF,50V |
| | | C561 | QERF1HM-105 | E CAPACITOR | 1µF,50V |
| | | C563 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C567 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C901 | QETN0JM-477 | E CAPACITOR | 470µF,6.3V |
| | | C904 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C911 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C912 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C913 | QETN0JM-477 | E CAPACITOR | 470µF,6.3V |
| | | C914 | NRSA02J-0R0X | MG RESISTOR,S5900U/U(C) | 0Ω,1/10W |
| | | C2001 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2002 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C2003 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C2005 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2006 | NCB21HK-123X | CAPACITOR | 0.012µF,50V |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | C2007 | QEKJ1CM-226 | E CAPACITOR | 22µF,16V |
| | | C2008 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2009 | NCB21HK-102X | CAPACITOR | 0.001µF,50V |
| | | C2010 | NCB21HK-222X | CAPACITOR | 0.0022µF,50V |
| | | C2011 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2012 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2051 | NCB21HK-331X | CAPACITOR | 330pF,50V |
| | | C2052 | QFLC1HJ-823Z | F CAPACITOR,S3900U/U(C) | 0.082µF,50V |
| | | | QFLC1HJ-333Z | F CAPACITOR,S5900U/U(C) | 0.033µF,50V |
| | | C2053 | NCB21HK-332X | CAPACITOR,S5900U/U(C) | 0.0033µF,50V |
| | | | NCB21HK-472X | CAPACITOR,S3900U/U(C) | 0.0047µF,50V |
| | | C2054 | NCB21EK-223X | CAPACITOR,S3900U/U(C) | 0.022µF,25V |
| | | | NCB21HK-103X | CAPACITOR,S5900U/U(C) | 0.01µF,50V |
| | | C2055 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C2061 | QFLC1HJ-333Z | F CAPACITOR,S5900U/U(C) | 0.033µF,50V |
| | | C2062 | NCB21HK-332X | CAPACITOR,S5900U/U(C) | 0.0033µF,50V |
| | | C2063 | NCB21HK-103X | CAPACITOR,S5900U/U(C) | 0.01µF,50V |
| | | C2064 | QEKJ1EM-106 | E CAPACITOR,S5900U/U(C) | 10µF,25V |
| | | C2201 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C2202 | NCB21EK-333X | CAPACITOR | 0.033µF,25V |
| | | C2203 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C2204 | NCB21HK-102X | CAPACITOR | 0.001µF,50V |
| | | C2205 | QEKJ1HM-105 | E CAPACITOR | 1µF,50V |
| | | C2206 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C2207 | QEKJ1CM-476 | E CAPACITOR | 47µF,16V |
| | | C2208 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2209 | QEKJ1HM-104 | E CAPACITOR | 0.1µF,50V |
| | | C2210 | QEKJ1HM-104 | E CAPACITOR | 0.1µF,50V |
| | | C2215 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2217 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C2219 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C2220 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2221 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C2222 | QEKJ1HM-474 | E CAPACITOR | 0.47µF,50V |
| | | C2223 | QEKJ1HM-474 | E CAPACITOR | 0.47µF,50V |
| | | C2224 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C2225 | QEKJ1HM-475 | E CAPACITOR | 4.7µF,50V |
| | | C2226 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C2227 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C2251 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C2252 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C2253 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C2254 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C3001 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C3003 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C3008 | NCB21HK-102X | CAPACITOR | 0.001µF,50V |
| | | C3013 | QEKJ1EM-106 | E CAPACITOR | 10µF,25V |
| | | C3016 | NDC21HJ-180X | CAPACITOR | 18pF,50V |
| | | C3017 | NDC21HJ-270X | CAPACITOR | 27pF,50V |
| | | C3019 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C3022 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C3023 | NCF21CZ-105X | CAPACITOR | 1µF,16V |
| | | C3035 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C3036 | QERF0JM-107 | E CAPACITOR | 100µF,6.3V |
| | | C3048 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C4001 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C4002 | QERF1HM-105 | E CAPACITOR | 1µF,50V |
| | | C4004 | QERF1AM-336 | E CAPACITOR | 33µF,10V |
| | | C4006 | NCB21EK-563X | CAPACITOR | 0.056µF,25V |
| | | C4007 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C4009 | NCB21HK-102X | CAPACITOR | 0.001µF,50V |
| | | C4010 | QERF0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C4011 | NCB21CK-224X | CAPACITOR | 0.22µF,16V |
| | | C4014 | NDC21HJ-101X | CAPACITOR | 100pF,50V |
| | | C4015 | NDC21HJ-101X | CAPACITOR | 100pF,50V |
| | | C4019 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C4022 | NDC21HJ-101X | CAPACITOR | 100pF,50V |
| | ⚠ | C5001 | QFZ9073-683 | F CAPACITOR | 0.068µF,250V |
| | ⚠ | C5004 | QCZ9094-472 | CAPACITOR | 0.0047µF,125V |
| | | C5006 | QETM2DM-157 | E CAPACITOR | 150µF,200V |
| | | C5101 | QCZ0212-472 | CAPACITOR | 0.0047µF,1kV |
| | | C5102 | QCZ0339-101Z | CAPACITOR | 100pF,1kV |
| | | C5104 | QEKJ1HM-105 | E CAPACITOR | 1µF,50V |
| | | C5105 | QFN31HJ-183 | F CAPACITOR | 0.018µF,50V |
| | | C5107 | QFV91HJ-104 | F CAPACITOR | 0.1µF,50V |
| | | C5201 | QEMU0JM-227 | E CAPACITOR | 220µF,6.3V |
| | | C5202 | QETN1CM-108 | E CAPACITOR | 1000µF,16V |
| | | C5203 | QEMT1AM-128 | E CAPACITOR | 1200µF,10V |
| | | C5204 | QETJ2AM-475 | E CAPACITOR | 4.7µF,100V |
| | | C5205 | QETN1HM-106 | E CAPACITOR | 10µF,50V |
| | | C5206 | QETN1AM-476 | E CAPACITOR | 47µF,10V |
| | | C5207 | QETN1CM-107 | E CAPACITOR | 100µF,16V |
| | | C5301 | QEKJ1CM-107 | E CAPACITOR | 100µF,16V |
| | | C5302 | QEKJ1HM-106 | E CAPACITOR | 10µF,50V |
| | | C5303 | QEKJ1CM-107 | E CAPACITOR | 100µF,16V |
| | | C5304 | NCB21HK-102X | CAPACITOR | 0.001µF,50V |
| | | C5305 | QFV91HJ-154 | F CAPACITOR | 0.15µF,50V |
| | | C5311 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C6029 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C7001 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C7002 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C7003 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C7005 | NDC21HJ-470X | CAPACITOR | 47pF,50V |
| | | C7006 | NDC21HJ-330X | CAPACITOR | 33pF,50V |
| | | C7007 | QEKJ1HM-106 | E CAPACITOR | 10µF,50V |
| | | C7008 | NCB21HK-102X | CAPACITOR | 0.001µF,50V |
| | | C7011 | QCFB1HZ-104 | CAPACITOR | 0.1µF,50V |
| | | C7015 | QCFB1HZ-104 | CAPACITOR | 0.1µF,50V |
| | | C7206 | QEKJ0JM-227 | E CAPACITOR | 220µF,6.3V |
| | | L1 | QQL29BJ-100Z | COIL | 10µH |
| | | L2 | QQL29BJ-101Z | COIL | 100µH |
| | | L3 | QQL29BJ-100Z | COIL | 10µH |
| | | L4 | QQL29BJ-100Z | COIL | 10µH |
| | | L5 | QQL29BJ-100Z | COIL | 10µH |
| | | L11 | QQL01BJ-120Z | COIL | 12µH |
| | | L13 | QQL231J-101Y | COIL | 100µH |
| | | L15 | QQL29BJ-100Z | COIL | 10µH |
| | | L18 | QUY153-050Y | IM BUS WIRE | |
| | | L19 | QQL29BJ-100Z | COIL | 10µH |
| | | L20 | QQL231J-101Y | COIL | 100µH |
| | | L28 | QQL231J-150Y | COIL | 15µH |
| | | L201 | QUY153-050Y | IM BUS WIRE | |
| | | L203 | QQL231J-3R3Y | COIL | 3.3µH |
| | | L401 | QQL231J-150Y | COIL,S5900U/U(C) | 15µH |
| | | L402 | QUY153-050Y | IM BUS WIRE,S5900U/U(C) | |
| | | L501 | QQL29BJ-100Z | COIL | 10µH |
| | | L503 | QQL29BJ-100Z | COIL | 10µH |
| | | L504 | QQL29BJ-100Z | COIL | 10µH |
| | | L901 | QQL29BJ-101Z | COIL | 100µH |
| | | L2001 | QUY153-050Y | IM BUS WIRE | |
| | | L2251 | QQL29BJ-100Z | COIL | 10µH |
| | | L4001 | QUY153-050Y | IM BUS WIRE | |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | L5201 | PELN1184 | COIL | 33µH |
| | | L5202 | PU60944-330K | COIL | 33µH |
| | | L5301 | QQL01BJ-101Z | COIL | 100µH |
| | | L6001 | QQL29BK-1R0Z | COIL | 1µH |
| | | L6003 | QQL29BK-1R0Z | COIL | 1µH |
| | | L6004 | QQL071J-1R0Y | COIL | 1µH |
| | | L6032 | QUY153-050Y | IM BUS WIRE | |
| | | L6050 | QUY153-050Y | IM BUS WIRE | |
| | | L7201 | QQL29BJ-101Z | COIL | 100µH |
| | | X2 | QAX0575-001 | CRYSTAL RESONATOR | |
| | | X3001 | QAX0526-001 | CRYSTAL RESONATOR | |
| | | S3001 | QSW0602-004 | PUSH SWITCH,REC SAFETY | |
| | | S3002 | QSW0695-001 | PUSH SWITCH,S CASS | |
| | | S7001 | QSW0456-002Z | TACT SWITCH,POWER | |
| | | S7002 | QSW0456-002Z | TACT SWITCH,REC LINK | |
| | | S7004 | QSW0456-002Z | TACT SWITCH,SP/EP,S3900U/U(C) | |
| | | | QSW0456-002Z | TACT SWITCH,INSERT,S5900U/U(C) | |
| | | S7006 | QSW0456-002Z | TACT SWITCH,DISPLAY,S3900U/U(C) | |
| | | | QSW0456-002Z | TACT SWITCH,A.DUB,S5900U/U(C) | |
| | | S7008 | QSW0456-002Z | TACT SWITCH,PLAY | |
| | | S7010 | QSW0456-002Z | TACT SWITCH,E.PROG | |
| | | S7011 | QSW0456-002Z | TACT SWITCH,REC | |
| | | S7013 | QSW0456-002Z | TACT SWITCH,PAUSE | |
| | | S7015 | QSW0456-002Z | TACT SWITCH,STOP/EJECT | |
| | | S7016 | QSW0456-002Z | TACT SWITCH,SVHS ET | |
| | | K2251 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | K2252 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | K2253 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | K5101 | QQR0678-001Z | FERRITE BEAD | |
| | | K5102 | QQR0678-001Z | FERRITE BEAD | |
| | | PC3001 | GP3S123 | IC(PHOTO SENSOR | |
| | | PC3002 | GP3S123 | IC(PHOTO SENSOR | |
| | ⚠ | PC5101 | PS2501-1 | PH COUPLER | |
| | | T2051 | PELN0832 | OSC TRANSFORMER,S3900U/U(C) | |
| | | | PELN0860 | OSC TRANSFORMER,S5900U/U(C) | |
| | | T2052 | PELN0861 | OSC TRANSFORMER,S5900U/U(C) | |
| | ⚠ | T5001 | QQS0031-002 | SW TRANSFORMER | |
| | | ET1 | LP30859-001A | EARTH PLATE | |
| | | HD1 | PQ35479-1-4 | HOLDER(FDP),DI7001 | |
| | | HS1 | LP40090-001A | HEAT SINK,Q5101 | |
| | ⚠ | CD1 | QMPD340-165-K | POWER CORD | |
| | | SD1 | LP30864-001A | SHIELD CASE(PRE) | |
| | | DI7001 | QLF0031-001 | FL TUBE | |
| | | TU6001 | QAU0207-001 | TUNER | |
| | | OT1 | QYTDSF3010M | SCREW,X2 | |
| | | OT2 | QYTDST3006Z | SCREW,Q5101 | |
| | | J1 | QNN0380-002 | PIN JACK,REAR1 IN | |
| | | J2 | QNN0286-002 | PIN JACK,REAR OUT | |
| | | J4 | QND0076-001 | S JACK,REAR S IN | |
| | | J5 | QND0076-001 | S JACK,S_OUT | |
| | ⚠ | TB1 | LP20887-009A | TERMINAL BOARD | |
| | | FC5001 | QNG0006-001Z | FUSE CLIP,F5001 | |
| | | FC5002 | QNG0006-001Z | FUSE CLIP,F5001 | |
| | | FW3001 | QUM022-13A4A4 | PARA RIBON WIRE | |
| | | FW3002 | QUM022-30A4A4 | PARA RIBON WIRE | |
| | | J7101 | QNN0381-001 | PIN JACK,FRONT IN | |
| | ⚠ | LF5002 | QQR0532-001 | LINE FILTER | |
| | ⚠ | VA5001 | QAF0023-431Z | VARISTOR | |
| | | CN1 | QGF1028C1-11 | FPC CONNECTOR,(1-11)U.DRUM,S3900U/U(C) | |
| | | | QGF1028C1-13 | FPC CONNECTOR,(1-13)U.DRUM,S5900U/U(C) | |
| | | CN2001 | QGF1207C1-07 | FPC CONNECTOR,(1-7)A/C HEAD | |
| | | CN2002 | QGB2532J1-02 | CONNECTOR,(1-2)FE HEAD | |
| | | CN3001 | QGB2015M2-08 | CONNECTOR,(1-8)CAPSTAN MOTOR | |
| | | CN3002 | QGF1207C1-05 | FPC CONNECTOR,(1-5)DRUM MDA | |
| | | CN3003 | QGB2532J1-02 | CONNECTOR,(1-2)LOADING MOTOR | |
| | | CN3004 | QGB2534J2-04 | CONNECTOR,(1-4)ROTARY ENCODER | |
| | | CN7001 | QGF1207C1-09 | FPC CONNECTOR,(1-9)ADV.JOG | |
| | | CN7103 | QGF1207C1-04 | FPC CONNECTOR,(1-4)S JACK,S5900U/U(C) | |
| | ⚠ | CP4001 | ICP-N25 | CIRCUIT PROTECTOR | |
| | ⚠ | CP5302 | ICP-N25 | CIRCUIT PROTECTOR | |
| | ⚠ | F5001 | QMF51N2-1R25J1 | FUSE | T1.25A,AC250V |

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## 2D DIGITAL BOARD ASSEMBLY <05>

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | PW1 | LPA10090-05A | 2D DIGITAL BOARD ASSY,S5900U/U(C) | |
| | | | LPA10090-06A | 2D DIGITAL BOARD ASSY,S3900U/U(C) | |
| | | IC1201 | JCP8036 | IC | |
| | ⚠ | Q1201 | 2SC1317/RS/-T | TRANSISTOR | |
| | | Q1202 | 2SA1576A/QR/-X | TRANSISTOR | |
| | | | or 2PA1576/R/-X | TRANSISTOR | |
| | | Q1203 | 2SA1576A/QR/-X | TRANSISTOR | |
| | | | or 2PA1576/R/-X | TRANSISTOR | |
| | | Q1204 | 2SC4081/QRS/-X | TRANSISTOR | |
| | | | or 2PC4081/R/-X | TRANSISTOR | |
| | | Q1205 | 2SC4081/S/-X | TRANSISTOR | |
| | | D1201 | RD4.3ES/B3/-T2 | ZENER DIODE | |
| | | D1202 | QUY153-050Y | IM BUS WIRE | |
| | | R1201 | NRSA02J-121X | MG RESISTOR | 120Ω,1/10W |
| | | R1202 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | R1203 | NRSA02J-221X | MG RESISTOR | 220Ω,1/10W |
| | | R1204 | NRSA02J-221X | MG RESISTOR | 220Ω,1/10W |
| | | R1205 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R1206 | NRSA02J-561X | MG RESISTOR | 560Ω,1/10W |
| | | R1207 | NRSA02J-562X | MG RESISTOR | 5.6kΩ,1/10W |
| | | R1208 | NRSA02J-123X | MG RESISTOR | 12kΩ,1/10W |
| | | R1209 | NRSA02J-180X | MG RESISTOR | 18Ω,1/10W |
| | | R1210 | NRSA02J-393X | MG RESISTOR | 39kΩ,1/10W |
| | | R1211 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R1212 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R1213 | NRSA02J-181X | MG RESISTOR | 180Ω,1/10W |
| | | R1214 | NRSA02J-181X | MG RESISTOR | 180Ω,1/10W |
| | | R1215 | NRSA02J-102X | MG RESISTOR | 1kΩ,1/10W |
| | | R1216 | NRSA02J-151X | MG RESISTOR | 150Ω,1/10W |
| | | R1217 | NRSA02J-151X | MG RESISTOR | 150Ω,1/10W |
| | | R1218 | NRSA02J-301X | MG RESISTOR | 300Ω,1/10W |
| | | R1220 | NRSA02J-561X | MG RESISTOR | 560Ω,1/10W |
| | | R1222 | NRSA02J-471X | MG RESISTOR | 470Ω,1/10W |
| | | R1223 | NRSA02J-103X | MG RESISTOR | 10kΩ,1/10W |
| | | R1224 | NRSA02J-561X | MG RESISTOR | 560Ω,1/10W |
| | | R1230 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R1231 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R1232 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | R1233 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | VR1201 | QVZ3521-103Z | V RESISTOR | |
| | | B1204 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | C1201 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | C1211 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C1212 | NCB21HK-102X | CAPACITOR | 0.001µF,50V |
| | | C1213 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1214 | NCF21CZ-105X | CAPACITOR | 1µF,16V |
| | | C1215 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C1216 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1217 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1218 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1219 | NCF21CZ-105X | CAPACITOR | 1µF,16V |
| | | C1220 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C1222 | NDC21HJ-151X | CAPACITOR | 150pF,50V |
| | | C1223 | NDC21HJ-680X | CAPACITOR | 68pF,50V |
| | | C1225 | NDC21HJ-151X | CAPACITOR | 150pF,50V |
| | | C1226 | NDC21HJ-680X | CAPACITOR | 68pF,50V |
| | | C1227 | NCB21EK-104X | CAPACITOR | 0.1µF,25V |
| | | C1228 | QEKJ1EM-475 | E CAPACITOR | 4.7µF,25V |
| | | C1229 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C1230 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1231 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1232 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1233 | QDYB1CM-103Y | CAPACITOR | 0.01µF,16V |
| | | C1234 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1235 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | C1236 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1237 | NCF21EZ-104X | CAPACITOR | 0.1µF,25V |
| | | C1238 | NDC21HJ-180X | CAPACITOR | 18pF,50V |
| | | C1239 | NDC21HJ-560X | CAPACITOR | 56pF,50V |
| | | C1243 | NCB21HK-103X | CAPACITOR | 0.01µF,50V |
| | | C1244 | QEKJ1EM-475 | E CAPACITOR | 4.7µF,25V |
| | | C1245 | NDC21HJ-150X | CAPACITOR | 15pF,50V |
| | | C1246 | QEKJ0JM-476 | E CAPACITOR | 47µF,6.3V |
| | | L1202 | QQL29BJ-101Z | COIL | 100µH |
| | | L1203 | QQL29BJ-101Z | COIL | 100µH |
| | | L1204 | QQL29BJ-101Z | COIL | 100µH |
| | | L1205 | QQL071J-2R7Y | COIL | 2.7µH |
| | | L1206 | QQL071J-2R7Y | COIL | 2.7µH |
| | | L1207 | QQL29BJ-101Z | COIL | 100µH |
| | | L1208 | QQL071J-150Y | COIL | 15µH |
| | | L1209 | QUY153-050Y | IM BUS WIRE | |
| | ⚠ | LC1201 | QQL29BJ-101Z | COIL | 100µH |
| | | SD1 | LP30706-001C | SHIELD FRAME(S-VHS) | |
| | | SD2 | LP30684-001A | SHIELD CASE(S-VHS),S5900U/U(C) | |
| | | CN1201 | QGG2502K1-17 | HEADER PIN | |

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### A/C HEAD BOARD ASSEMBLY <12>

| | | |
|---|---|---|
| PW1 | LP10122-01A1 | A/C HEAD BOARD ASSY |
| CN1 | QGF1208F1-07 | FPC CONNECTOR |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|

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### DEMOD BOARD ASSEMBLY <14>

| | | | |
|---|---|---|---|
| PW1 | PB11076A | DEMOD BOARD ASSY | |
| IC1501 | UPC1852AGT | IC | |
| | or UPC1854AGT | IC | |
| R1501 | QRE141J-102Y | RESISTOR | 1kΩ,1/4W |
| R1502 | QRE141J-334Y | RESISTOR | 330kΩ,1/4W |
| R1503 | QRE141J-124Y | RESISTOR | 120kΩ,1/4W |
| R1504 | QRE141J-302Y | RESISTOR | 3kΩ,1/4W |
| R1505 | QRE141J-512Y | RESISTOR | 5.1kΩ,1/4W |
| R1506 | QRE141J-333Y | RESISTOR | 33kΩ,1/4W |
| R1507 | QRE141J-333Y | RESISTOR | 33kΩ,1/4W |
| R1508 | QRE141J-392Y | RESISTOR | 3.9kΩ,1/4W |
| R1509 | QRE141J-122Y | RESISTOR | 1.2kΩ,1/4W |
| R1510 | QRE141J-392Y | RESISTOR | 3.9kΩ,1/4W |
| R1511 | QRE141J-122Y | RESISTOR | 1.2kΩ,1/4W |
| R1517 | QRE141J-123Y | RESISTOR | 12kΩ,1/4W |
| C1501 | QETN1CM-226 | E CAPACITOR | 22µF,16V |
| C1502 | QETN1HM-104 | E CAPACITOR | 0.1µF,50V |
| C1503 | QETN1HM-105 | E CAPACITOR | 1µF,50V |
| C1504 | QETN1HM-475 | E CAPACITOR | 4.7µF,50V |
| C1505 | QETN1HM-225 | E CAPACITOR | 2.2µF,50V |
| C1506 | QETN1HM-104 | E CAPACITOR | 0.1µF,50V |
| C1507 | QFV11HJ-473 | F CAPACITOR | 0.047µF,50V |
| C1508 | QETN1HM-474 | E CAPACITOR | 0.47µF,50V |
| C1509 | QETN1HM-104 | E CAPACITOR | 0.1µF,50V |
| C1510 | QETN1HM-105 | E CAPACITOR | 1µF,50V |
| C1511 | QETN1HM-105 | E CAPACITOR | 1µF,50V |
| C1512 | QETN1HM-105 | E CAPACITOR | 1µF,50V |
| C1513 | QETN1HM-335 | E CAPACITOR | 3.3µF,50V |
| C1514 | QETN1HM-106 | E CAPACITOR | 10µF,50V |
| C1515 | QETN1HM-105 | E CAPACITOR | 1µF,50V |
| C1516 | QETN1HM-106 | E CAPACITOR | 10µF,50V |
| C1517 | QETN1HM-106 | E CAPACITOR | 10µF,50V |
| C1518 | QETN1HM-105 | E CAPACITOR | 1µF,50V |
| C1521 | QETN1HM-106 | E CAPACITOR | 10µF,50V |
| BK1 | LP40077-001A | BRACKET(BOARD) | |
| CN1501 | QGG2502K1-09 | HEADER PIN | |

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### S JACK BOARD ASSEMBLY(S5900U/U(C))<36>

| | | |
|---|---|---|
| PW1 | LPA20009-02B | S JACK BOARD ASSY |
| J7102 | QND0084-001 | S JACK |
| CN7108 | QGF1209F1-04 | FPC CONNECTOR,(1-4)MAIN |

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### ADV.JOG BOARD ASSEMBLY <38>

| | | |
|---|---|---|
| PW1 | LPA20013-04B | ADV.JOG BOARD ASSY |
| UN7002 | QSW0905-001 | ROTARY ENCODER |
| CN7004 | QGF1209F1-09 | FPC CONNECTOR,(1-9)MAIN |

| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|

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### LOADING MOTOR BOARD ASSEMBLY <55>

| | | | |
|---|---|---|---|
| | | PW2 | LP10122-01A2 | LOADING MOTOR BOARD ASSY | |
| | | CN1 | QGB2533K1-02 | CONNECTOR | |

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### R.PAUSE BOARD ASSEMBLY <91>

| | | | | |
|---|---|---|---|---|
| | | PW2 | LPA10134-03C2 | R.PAUSE BOARD ASSY | |
| | | R7156 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | B7151 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | B7152 | NRSA02J-0R0X | MG RESISTOR | 0Ω,1/10W |
| | | J7104 | PU60612 | MINI JACK | |

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### C.BOX BOARD ASSEMBLY <92>

| | | | | |
|---|---|---|---|---|
| | | PW3 | LPA10134-03C3 | C.BOX BOARD ASSY | |
| | | R7155 | NRSA02J-101X | MG RESISTOR | 100Ω,1/10W |
| | | J7105 | PU60612 | MINI JACK | |


| # | ⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|

# SECTION 4
# CHARTS AND DIAGRAMS

## NOTES OF SCHEMATIC DIAGRAM

**Safety precautions**
**The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.**

### 1. Units of components on the schematic diagram

Unless otherwise specified.

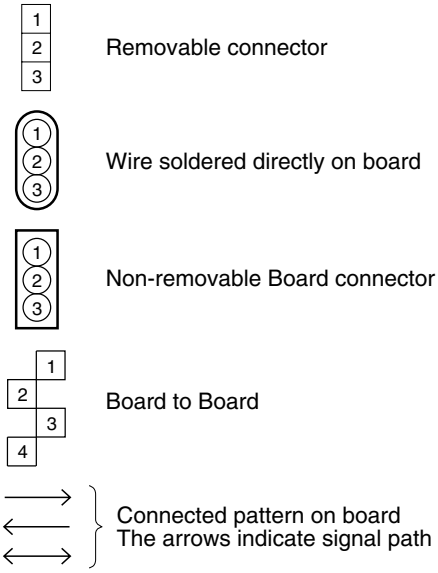
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K or k: kΩ (1000Ω), M: MΩ (1000kΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

### 2. Indications of control voltage

AUX : Active at high

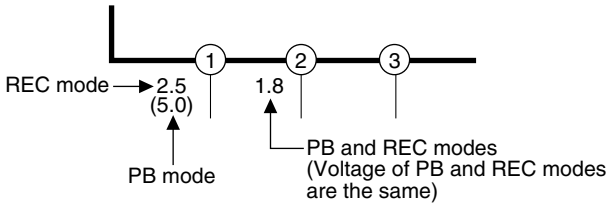
$\overline{\text{AUX}}$ or AUX(L) : Active at low

### 3. Interpreting Connector indications




### 4. Voltage measurement

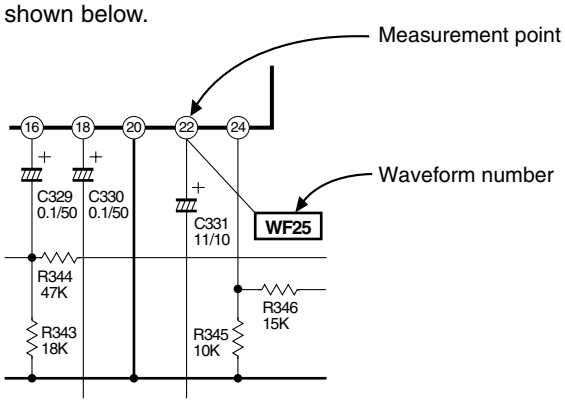
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



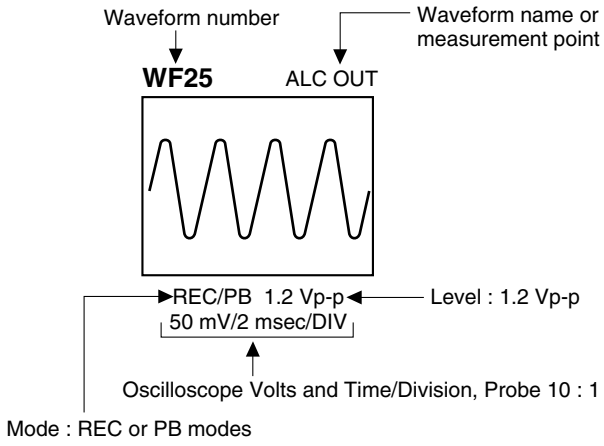

**Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.**

### 5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.




5) Waveform indications



### 6. Signal path Symbols

The arrows indicate the signal path as follows.

Playback signal path

Playback and recording signal path

Recording signal path
(including E-E signal path)

Capstan servo path

Drum servo path

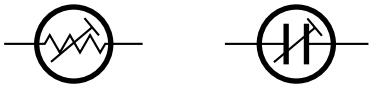
(Example)

R-Y Playback R-Y signal path

Y Recording Y signal path

### 7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



### 8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.

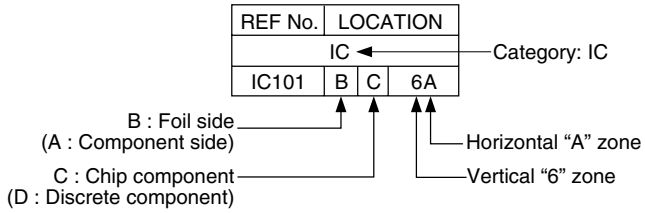
## CIRCUIT BOARD NOTES

### 1. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) indicated.

### 2. Parts location guides

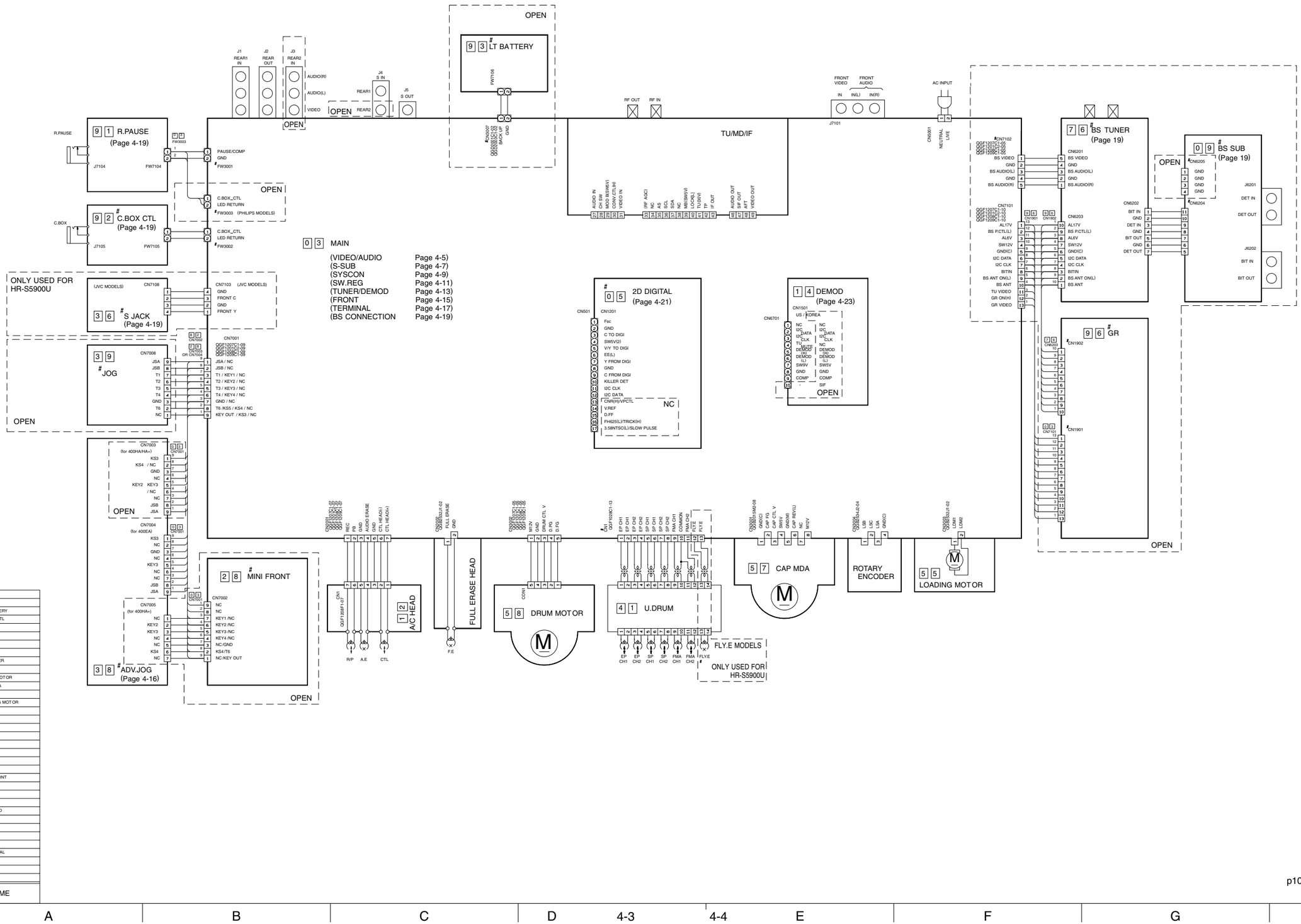
Parts location are indicated by guide scale on the circuit board.




**Note:**

**For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).**

## 4.1 BOARD INTERCONNECTIONS




| NO | NAME |
|---|---|
| 9 6 | GR |
| | |
| 9 3 | LT BATTERY |
| 9 2 | C.BOX CTL |
| 9 1 | R.PAUSE |
| | |
| | |
| | |
| 7 6 | BS TUNER |
| | |
| 5 8 | DRUM MOTOR |
| 5 7 | CAP MDA |
| | |
| 5 5 | LOADING MOTOR |
| | |
| 4 1 | U.DRUM |
| | |
| 3 9 | JOG |
| 3 8 | ADV.JOG |
| | |
| 3 6 | S JACK |
| | |
| 2 8 | MINI FRONT |
| | |
| 1 4 | DEMOD |
| | |
| 1 2 | A/C HEAD |
| | |
| 0 9 | BS SUB |
| | |
| | |
| 0 5 | 2D DIGITAL |
| | |
| 0 3 | MAIN |

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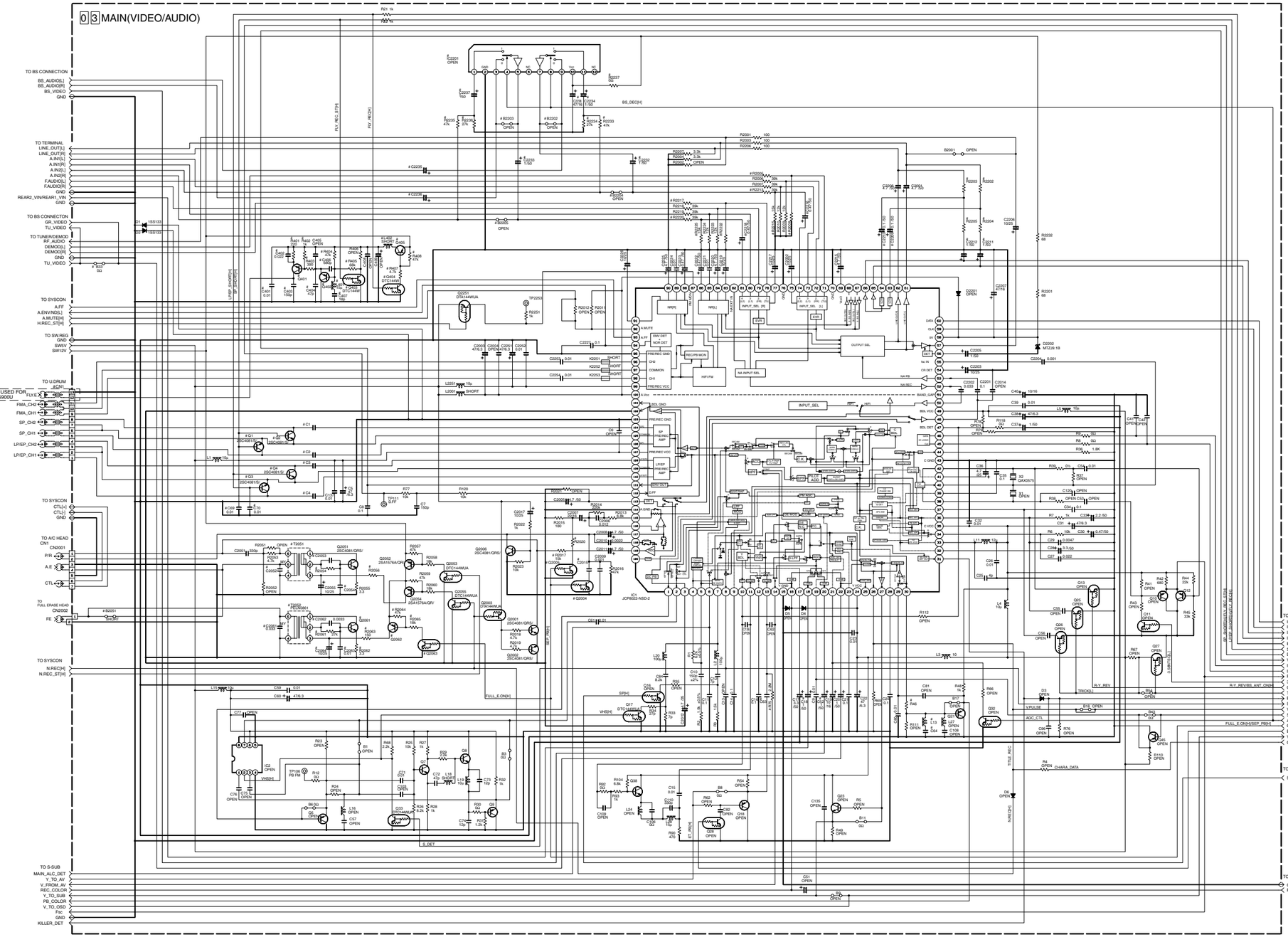
A B C D 4-3 4-4 E F G H

## 4.2 MAIN (VIDEO/AUDIO) SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




# DIFFERENCE TABLE

| MODEL | | Q401-Q405 R401-R409 | C401-C409 L401,L402 | CN1 | Q1-Q4 C69,C70 | C1-C4 |
|---|---|---|---|---|---|---|
| FLYING ERASE | YES | O | | 1-13 PIN | X | 0.01 |
| | NO | X | | 1-11 PIN | O | 1 |

| MODEL | | C52 | R2212,R2214 R2216,R2221 |
|---|---|---|---|
| BS TUNER | YES | O | O |
| | NO | X | X |

| MODEL | | C18 | R2213,R2215,C2216 R2220,R2215,C2218 |
|---|---|---|---|
| BS DECORDER OR L2_IN | YES | O | O |
| | NO | X | X |

| MODEL | | R2202,R2203,R2204,R2205 C2203,C2210,C2211,C2212 |
|---|---|---|
| L.IND | YES | O |
| | NO | X |

| MODEL | | B33 |
|---|---|---|
| GR TUNER | YES | X |
| | NO | O |

| MODEL | R75 | C63 |
|---|---|---|
| 2D | X | 0.1 |
| 3D | O | 0.047 |

| MODEL | R46 | L13 | C64 |
|---|---|---|---|
| PB COL TRAP | 2D(JVC) | 470 | 100µ | 12p |
| | 2D(PCEC) | 390 | 68µ | 20p |
| | 3D | 270 | 100µ | 12p |

| MODEL | | T2051,R2051,R2052,R2053 R2055,R2056,R2057,R2058 C2061,C2062,C2063,C2064 | T2051 | R2054 | R2056 | C2052 | C2053 | C2054 |
|---|---|---|---|---|---|---|---|---|
| A.DUB | YES | O | PELN0860 | 15k | 100 | 0.033 | 0.0033 | 0.01 |
| | NO | X | PELN0832 | 12k | 82 | 0.082 | 0.0047 | 0.022 |

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

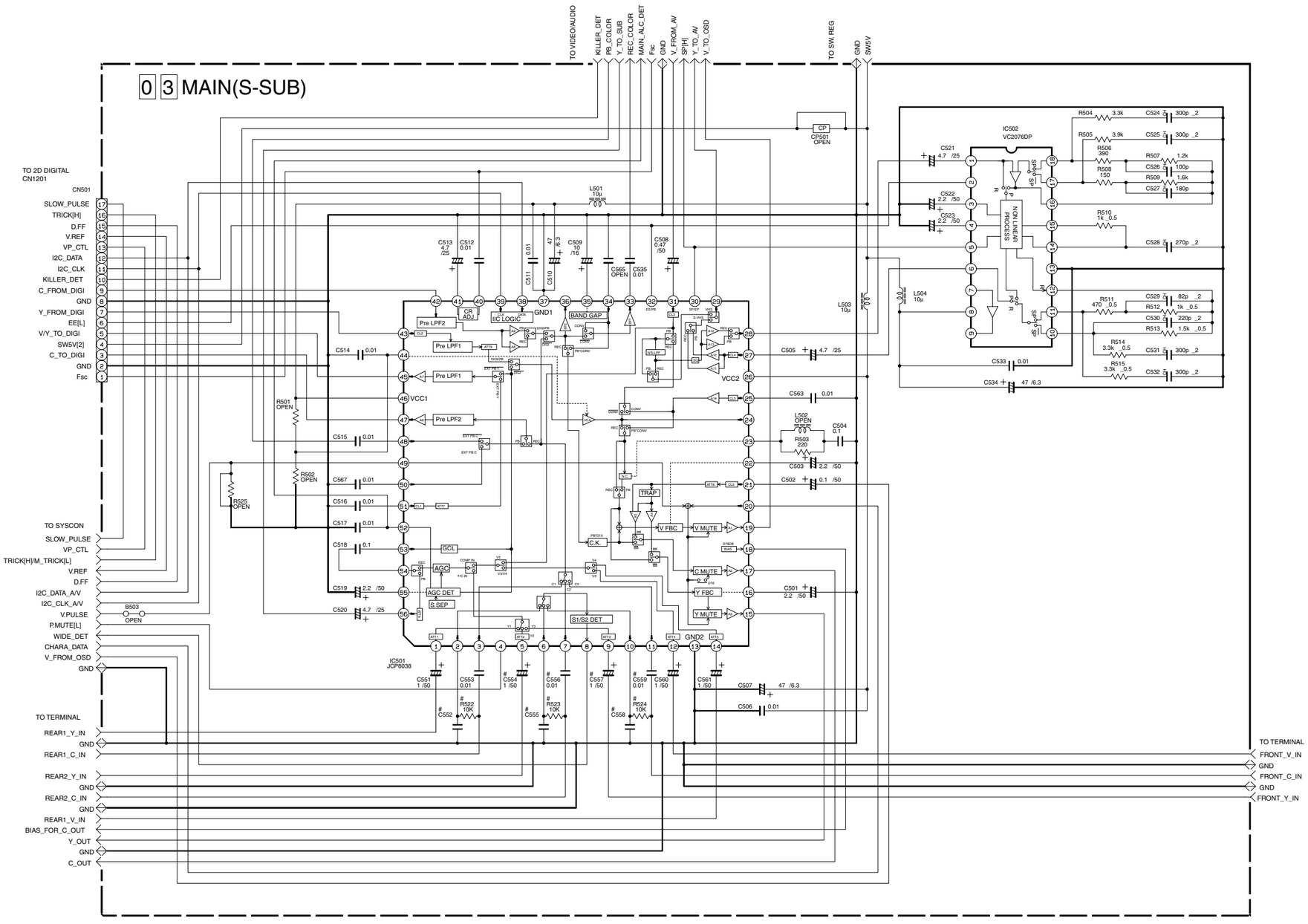
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p10351001a_rev0

A B C D 4-5 4-6 E F G H

## 4.3 MAIN (S-SUB) SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




# DIFFERENCE TABLE

| SYMBOL / MODEL | R523 C554 C555 C556 | R522 R524 C552 C558 | C557 C559 | C555 | C552 C558 |
|---|---|---|---|---|---|
| S-VHS JPN F_S_IN REAR2_IN | ○ | ○ | ○ | 0.01 | 0.01 |
| S-VHS JPN F_S_IN | X | ○ | ○ | 0Ω | 0.01 |
| S-VHS US F_S_IN | X | X | ○ | 0Ω | 0Ω |
| S-VHS US | X | X | X | 0Ω | 0Ω |

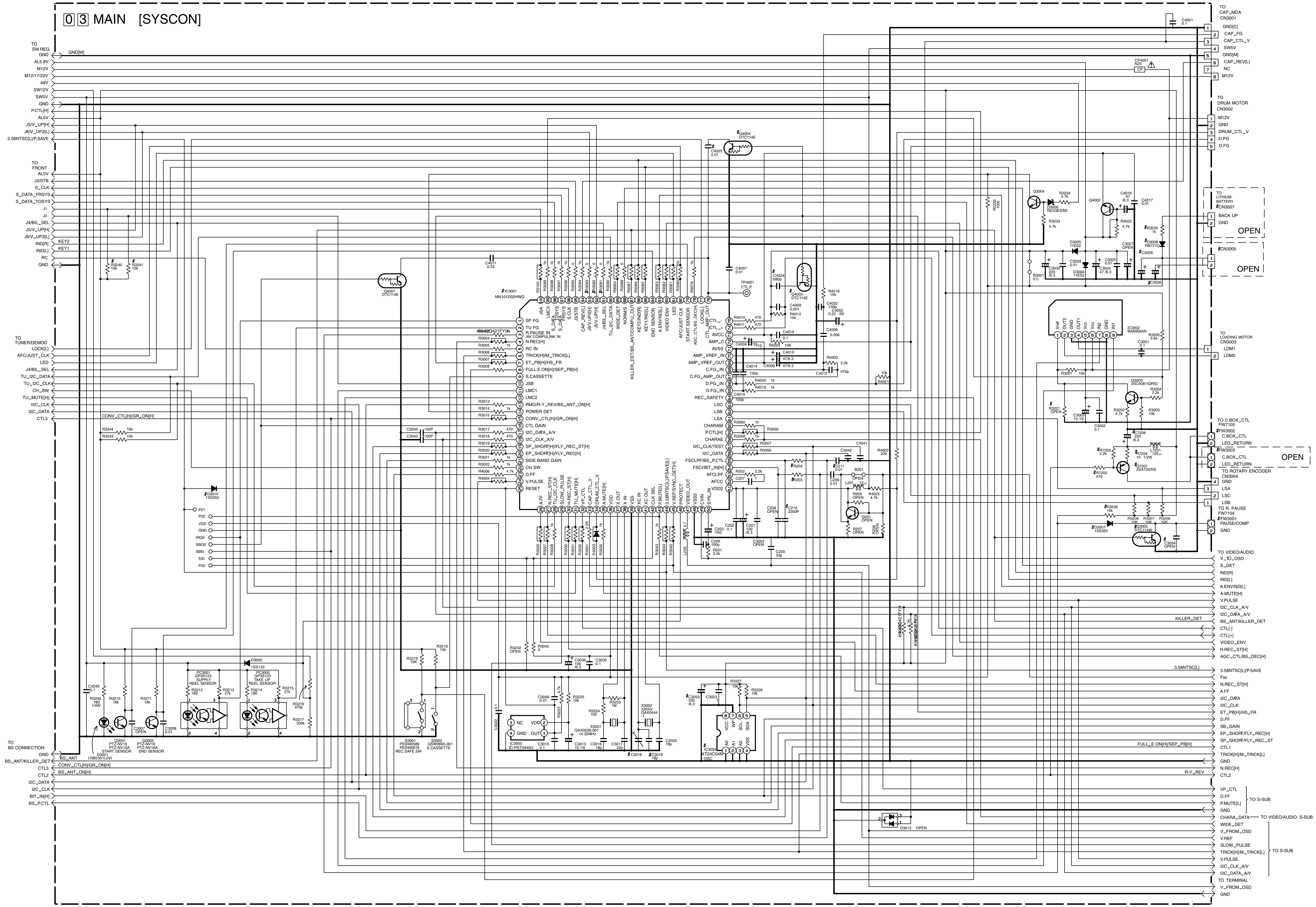
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20210001a_rev0

## 4.4 MAIN (SYSCON) SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*



03 MAIN [SYSCON]
TO SW.REG
GND
AL5.8V
M12V
M12/17/22V
48V
SW12V
SW5V
GND
P.CTL[H]
AL5V
J5/V_UP[H]
J6/V_UP2[L]
3.58NTSC[L]/P.SAVE
TO FRONT
AL5V
J3/STB
S_CLK
S_DATA_FRSYS
S_DATA_TOSYS
J1
J2
J4/BIL_SEL
J5/V_UP[H]
J6/V_UP2[L]
IND[R]
IND[L]
RC
GND
TO TUNER/DEMOD
LOCK[L]
AFC/JUST_CLK
LED
J4/BIL_SEL
TU_I2C_DATA
TU_I2C_CLK
CH_SW
TU_MUTE[H]
I2C_CLK
I2C_DATA
CTL3
TO BS CONNECTION
GND
BS_ANT/KILLER_DET
CTL3
CTL2
I2C_DATA
I2C_CLK
BIT_IN[H]
BS_P.CTL
IC3001 MN101D02HWD
IC3002 BA6956AN
IC3003 IC-PST3440U
IC3004 AT24C04N-10SC
PC3001 GP3S123 SUPPLY REEL SENSOR
PC3002 GP3S123 TAKE UP REEL SENSOR
Q3001 PTZ-NV16 PTZ-NV16A START SENSOR
Q3002 PTZ-NV16 PTZ-NV16A END SENSOR
S3001 PESW0589 PESW0678 REC.SAFE.SW
S3002 QSW0695-001 S.CASSETTE
X3001 QAX0526-001 14.32MHz
X3002 32KHz QAX0444-1
TO CAP_MDA CN3001
GND[C]
CAP_FG
CAP_CTL_V
SW5V
GND[M]
CAP_REV[L]
NC
M12V
TO DRUM MOTOR CN3002
M12V
GND
DRUM_CTL_V
D.PG
D.FG
TO LITHIUM BATTERY CN3007
BACK UP
GND
OPEN
CN3005
OPEN
TO LOADING MOTOR CN3003
LDM1
LDM2
TO C.BOX_CTL FW7105
FW3002
C.BOX_CTL
LED_RETURN
FW3003
C.BOX_CTL
LED_RETURN
OPEN
TO ROTARY ENCODER CN3004
GND
LSA
LSC
LSB
TO R. PAUSE FW7104
FW3001
PAUSE/COMP
GND
TO VIDEO/AUDIO
V_TO_OSD
S_DET
IND[R]
IND[L]
A.ENV/ND[L]
A.MUTE[H]
V.PULSE
I2C_CLK_A/V
I2C_DATA_A/V
BS_ANT/KILLER_DET
CTL[-]
CTL[+]
VIDEO_ENV
H.REC_ST[H]
AGC_CTL/BS_DEC[H]
3.58NTSC[L]/P.SAVE
Fsc
N.REC_ST[H]
A.FF
I2C_DATA
I2C_CLK
ET_PB[H]/HS_FR
D.FF
SB_GAIN
EP_SHORT/FLY_REC[H]
SP_SHORT/FLY_REC_ST
CTL1
TRICK[H]/M_TRICK[L]
GND
N.REC[H]
CTL2
VP_CTL
D.FF
P.MUTE[L]
GND
TO S-SUB
CHARA_DATA
TO VIDEO/AUDIO, S-SUB
WIDE_DET
V_FROM_OSD
V.REF
SLOW_PULSE
TRICK[H]/M_TRICK[L]
V.PULSE
I2C_CLK_A/V
I2C_DATA_A/V
TO S-SUB
TO TERMINAL
V_FROM_OSD
GND

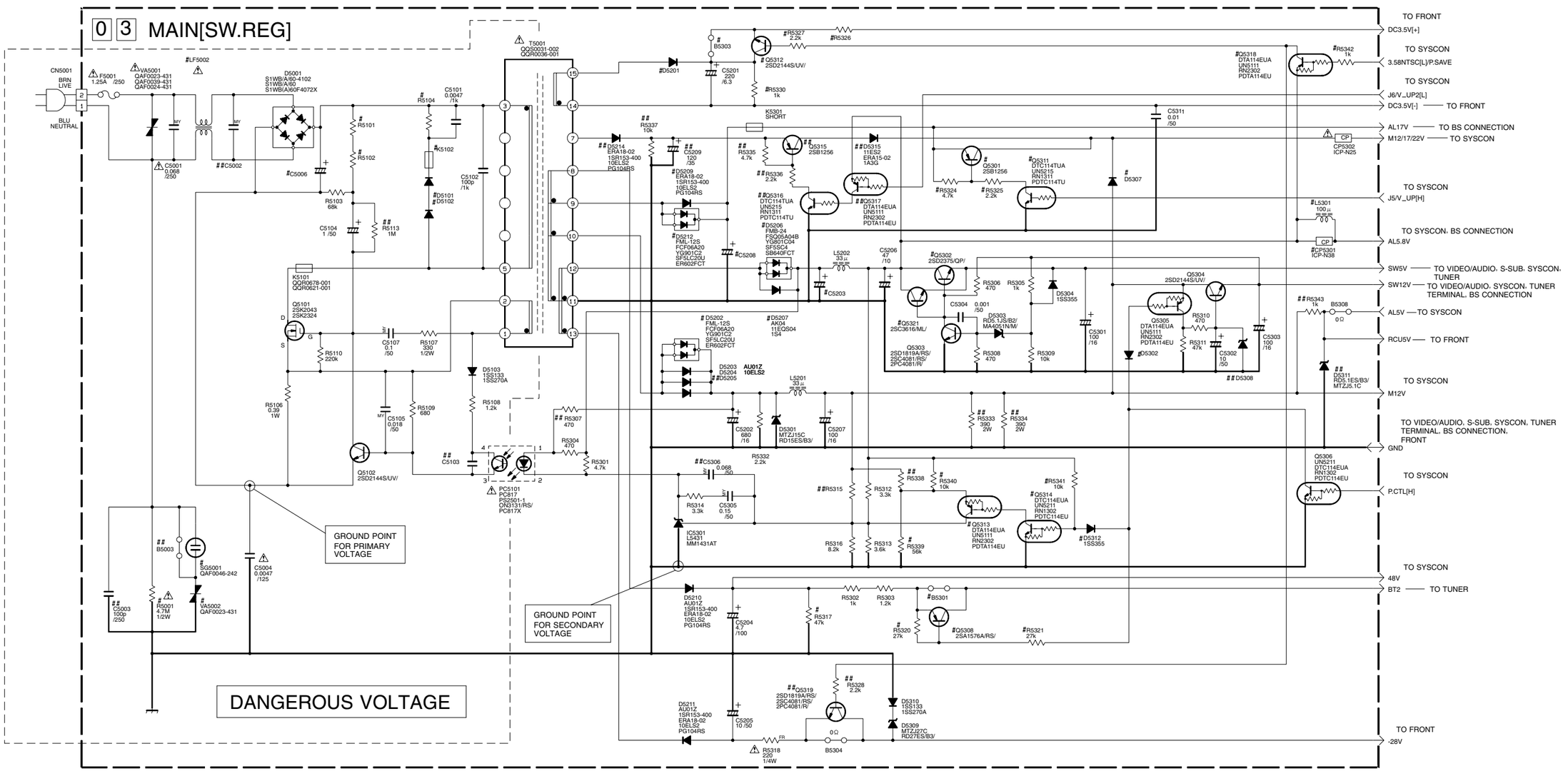

NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

p10347001a_rev0

## 4.5 MAIN (SW.REG) SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




##MARK ELEMENT ARE NOT MOUNTED

#DIFFERENCE TABLE 1

| | C5006 | C5203 | L5301 | CP5301 | D5206 | D5207 | R5001 | Q5302 | Q5321 |
|---|---|---|---|---|---|---|---|---|---|
| D1 | 82/200 | 680/10 | SHORT | NO | NO | YES | NO | NO | YES |
| D5 | 150/200 | 1200/10 | NO | YES | YES | NO | NO | YES | NO |
| S1 | 150/200 | 1200/10 | YES | NO | YES | NO | NO | YES | NO |
| S1U | 150/200 | 1200/10 | YES | NO | YES | NO | YES | YES | NO |
| S5 | 150/200 | Oct-00 | NO | YES | YES | NO | NO | YES | NO |

#DIFFERENCE TABLE 2

| HIGH SPEED FF/REW | C5208 | D5209 | D5212 | D5307 | D5314 Q5301 Q5311 | R5324 R5325 |
|---|---|---|---|---|---|---|
| DOM(W/O BS) | 180/25 | YES | NO | 1.10E+03 ERA15-02 1A3G | YES | |
| DOM(WITH BS) | 330/25 | NO | YES | 1.10E+03 ERA15-02 1A3G | YES | |
| OTHER | NO | NO | NO | SHORT | NO | |

#DIFFERENCE TABLE 3

| POWER SAVE | R5104 | B5301 B5303 | D5312 Q5308 Q5312 Q5313 Q5314 | Q5318 R5317 R5320 R5321 R5327 | R5330 R5339 R5340 R5341 R5342 | R5101 R5102 | D5302 |
|---|---|---|---|---|---|---|---|
| DOM | 150k 2W | NO | YES | | | 330k | 1SS355 |
| OTHER | 68k 2W | YES | NO | | | 220k | SHORT |

#DIFFERENCE TABLE 4

| LEVEL IND. | | D5201 | R5326 |
|---|---|---|---|
| -NO- | DOM | AK04 11EQS04 1S4 | 3.9 |
| | OTHER | AU01Z 10ELS2 | 0 |
| -YES- | | AK04 11EQS04 1S4 | 1 |

| SURGE | VA5002 SG5001 |
|---|---|
| PH | YES |
| OTHER | NO |

#DIFFERENCE TABLE 6

| | K5102 | D5101 D5102 |
|---|---|---|
| DOM | QQR0678-001 QQR0621-001 | AU01 10ELS4 |
| OTHER | SHORT | AU01 10ELS4 1SR153-400 ERA18-04 |

#DIFFERENCE TABLE 7

| | LF5002 |
|---|---|
| SVHS WITH BS | QQR0908-001 QQR0984-001 |
| OTHER | QQR0532-001 QQR0533-001 QQR0516-001 QQR0816-001 QQR0932-001 |

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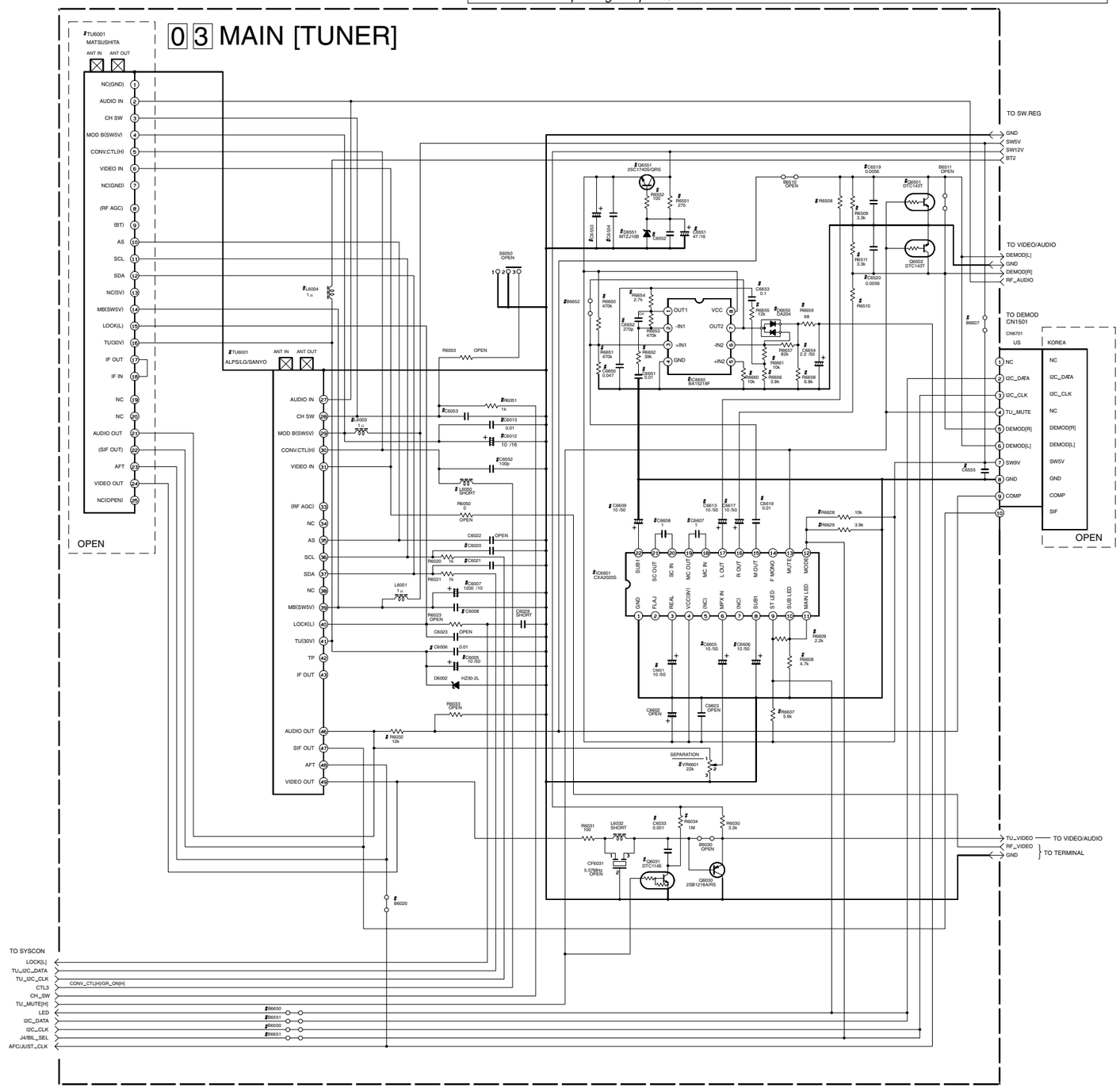
## 4.6 MAIN (TUNER/DEMOD) SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




# DIFFERENCE TABLE

| | | JPN | US | KR |
|---|---|---|---|---|
| TUNER | | | | |
| AFC | B6020 | × | ○ | ○ |
| MUTE | Q6031,R6034,C6033 | × | × | × |
| RF CONV | L6003,L6050, R6050-R6051 | × | ○ | ○ |
| US AUDIO | R6032 | × | ○ | × |
| 5V | C6007 | ○ | × | × |
| | C6005,C6008,C6012, C6013,C6020-C6021, C6052,C6053 | × | × | × |
| DEMOD | | | | |
| UNIT | CN6701 | × | US | KR |
| MUTE | Q6501,Q6502 | × | × | × |
| REG | Q6551-D6551, R6551-R6552 | ○ | ○ | × |
| I2C | B6550-B6551 | × | ○ | ○ |
| AUDIO OUT | R6508,R6510 | 12k | 0 | 0 |
| | R6509,R6511, C6519-C6520 | ○ | × | × |
| JPN | IC6601,IC6650, D6650,VR6601, R6507-R6509, R6628,R6629, R6650-R6661,C6601, C6605-C6609,C6613, C6617,C6619, C6650-C6654 B6650,B6651 | ○ | × | × |
| KR | B6607 | × | × | ○ |

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

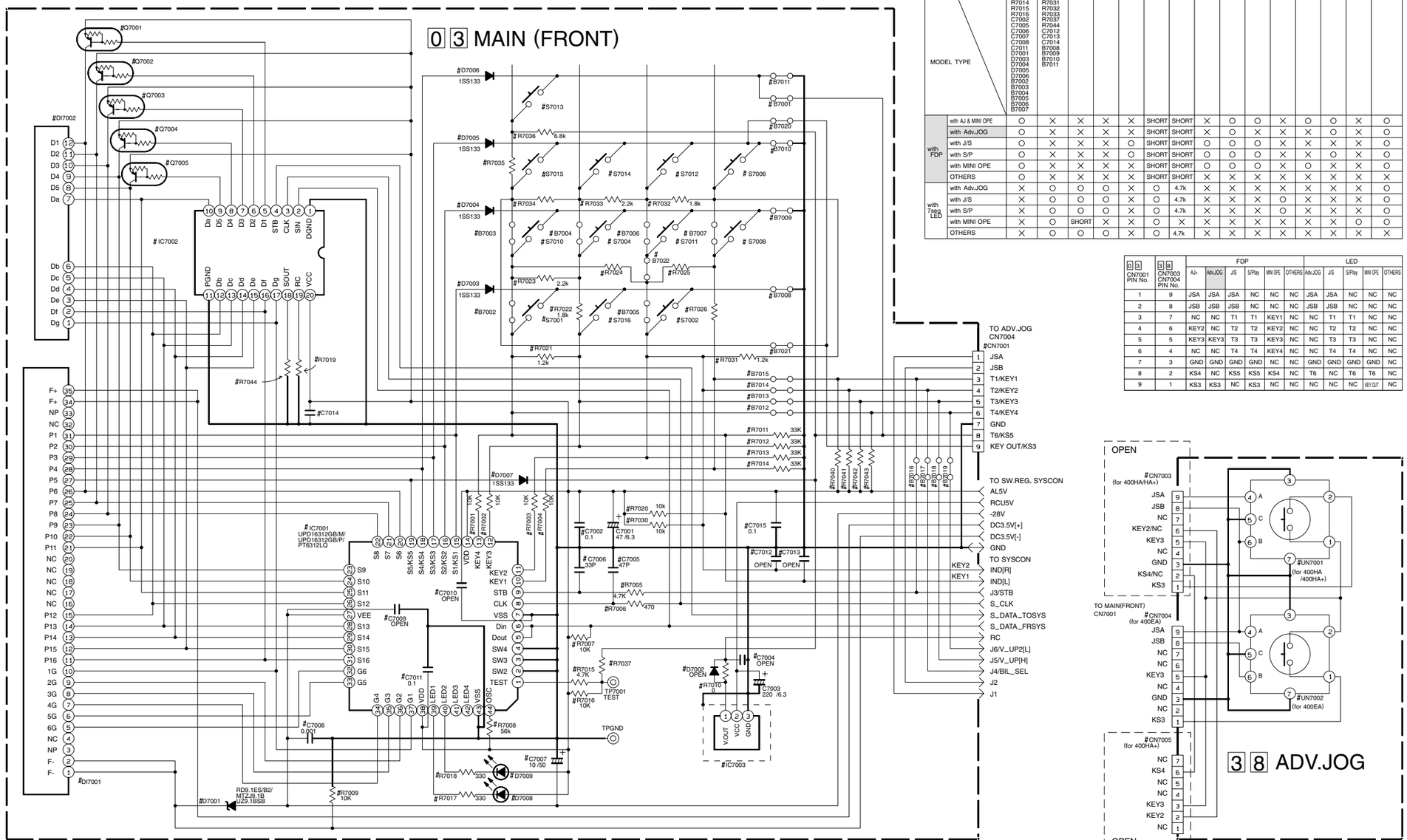
p10345001a_rev1

## 4.7 MAIN (FRONT) AND ADV.JOG SCHEMATIC DIAGRAMS

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*

| MODEL TYPE / SYMBOL | | DI7001 IC7001 R7001 R7002 R7003 R7004 R7005 R7006 R7007 R7008 R7009 R7011 R7012 R7013 R7014 R7015 R7016 C7002 C7005 C7006 C7007 C7008 C7011 D7001 D7003 D7004 D7005 D7006 B7002 B7003 B7004 B7005 B7006 B7007 | DI7002 IC7002 Q7001 Q7002 Q7003 Q7004 Q7005 R7019 R7020 R7021 R7023 R7024 R7025 R7030 R7031 R7032 R7033 R7037 R7044 C7012 C7013 C7014 B7008 B7009 B7010 B7011 | R7034 | R7036 | D7007 | R7022 R7026 | R7035 | B7012 B7015 | B7013 | B7014 | B7016 B7017 B7018 B7019 | B7001 | B7020 | B7021 | CN7001 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| with FDP | with AJ & MINI OPE | ○ | × | × | × | × | SHORT | SHORT | × | ○ | ○ | × | ○ | ○ | × | ○ |
| | with AdvJOG | ○ | × | × | × | × | SHORT | SHORT | × | ○ | × | × | × | ○ | × | ○ |
| | with J/S | ○ | × | × | × | ○ | SHORT | SHORT | ○ | ○ | ○ | × | × | × | × | ○ |
| | with S/P | ○ | × | × | × | ○ | SHORT | SHORT | ○ | ○ | ○ | × | × | ○ | × | ○ |
| | with MINI OPE | ○ | × | × | × | × | SHORT | SHORT | ○ | ○ | ○ | × | ○ | × | × | ○ |
| | OTHERS | ○ | × | × | × | × | SHORT | SHORT | × | × | × | × | × | × | × | × |
| with 7seg LED | with AdvJOG | × | ○ | ○ | ○ | × | ○ | 4.7k | × | × | × | × | × | × | × | ○ |
| | with J/S | × | ○ | ○ | ○ | × | ○ | 4.7k | × | × | × | ○ | × | × | × | ○ |
| | with S/P | × | ○ | ○ | ○ | × | ○ | 4.7k | × | × | × | ○ | × | × | × | ○ |
| | with MINI OPE | × | ○ | SHORT | × | × | ○ | × | × | × | × | × | × | × | ○ | ○ |
| | OTHERS | × | ○ | ○ | ○ | × | ○ | 4.7k | × | × | × | × | × | × | × | × |

| 0 3 CN7001 PIN No. | 3 8 CN7003 CN7004 PIN No. | FDP | | | | | | LED | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AJ+ | AdvJOG | J/S | S/Play | MINI OPE | OTHERS | AdvJOG | J/S | S/Play | MINI OPE | OTHERS |
| 1 | 9 | JSA | JSA | JSA | NC | NC | NC | JSA | JSA | NC | NC | NC |
| 2 | 8 | JSB | JSB | JSB | NC | NC | NC | JSB | JSB | NC | NC | NC |
| 3 | 7 | NC | NC | T1 | T1 | KEY1 | NC | NC | T1 | T1 | NC | NC |
| 4 | 6 | KEY2 | NC | T2 | T2 | KEY2 | NC | NC | T2 | T2 | NC | NC |
| 5 | 5 | KEY3 | KEY3 | T3 | T3 | KEY3 | NC | NC | T3 | T3 | NC | NC |
| 6 | 4 | NC | NC | T4 | T4 | KEY4 | NC | NC | T4 | T4 | NC | NC |
| 7 | 3 | GND | GND | GND | GND | NC | NC | GND | GND | GND | GND | NC |
| 8 | 2 | KS4 | NC | KS5 | KS5 | KS4 | NC | T6 | NC | T6 | T6 | NC |
| 9 | 1 | KS3 | KS3 | NC | KS3 | NC | NC | NC | NC | NC | KEY OUT | NC |







| SYMBOL / LED | R7017 D7008 | R7018 D7009 |
|---|---|---|
| for S7002 | ○ | × |
| for S7016 | × | ○ |

| RCU | R7010 | C7004 D7002 | IC7003 |
|---|---|---|---|
| JVC | SHORT | × | GP1U291Q PNA4652MOOYC PIC-28143LJ |
| PHILIPS | SHORT | × | GP1U290Q PNA4655MOOYC PIC-28142LJ |

NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

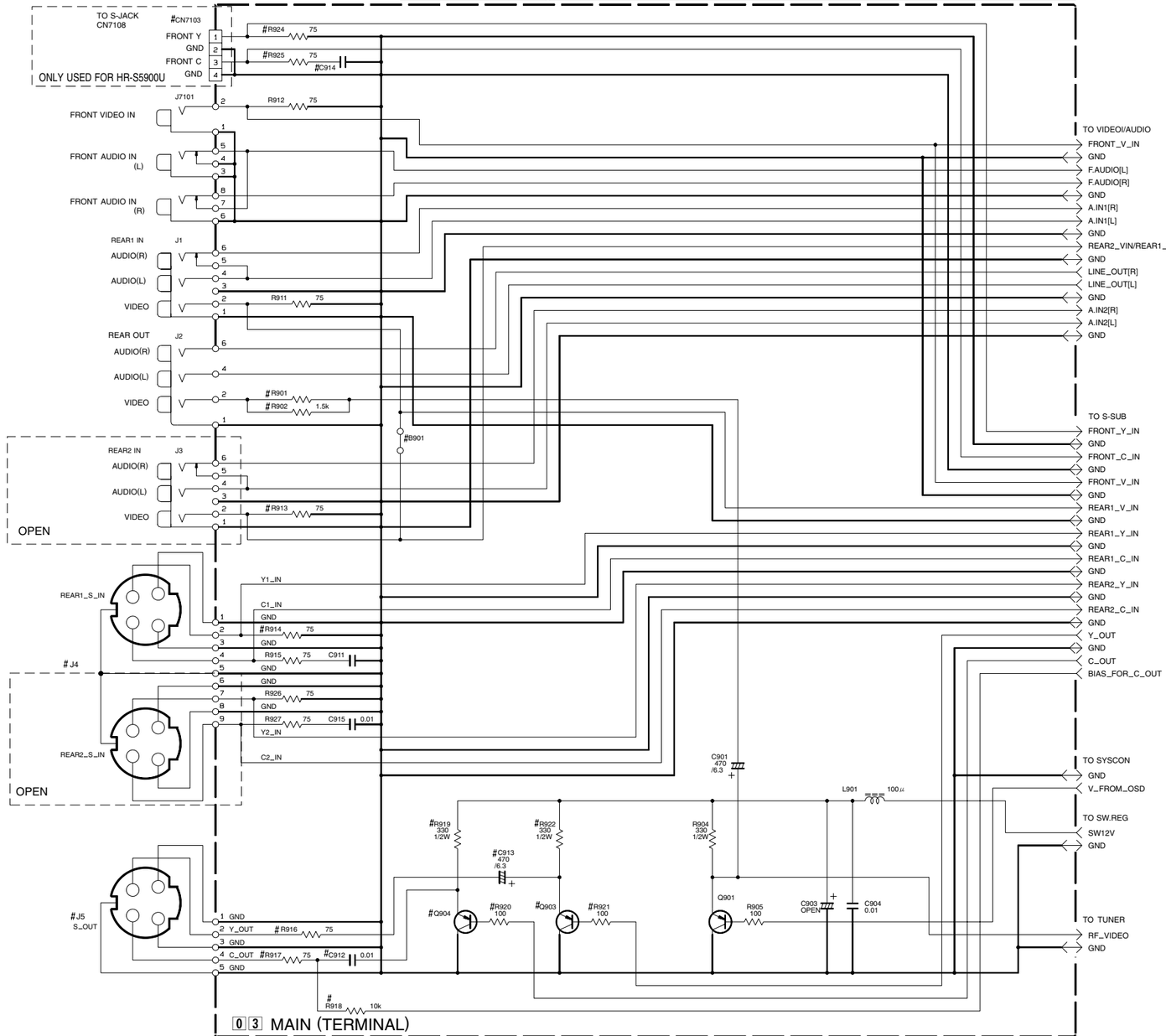
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20204001a_rev0.1

4-15 4-16

## 4.8 MAIN (TERMINAL) SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




# DIFFERENCE TABLE

○ : Used
× : Not used

| SYMBOL / MODEL | R913 J3 | J4 | R924 R925 CN7103 | C914 | R926 R927 C915 | R918 | C911 | R902 R914-R917 R919-R922 | Q903.Q904 C912.C913 J5 | B901 | R901 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S-VHS JPN F_S_IN REAR2_IN | ○ | S1/S2 | ○ | 0.01 | ○ | ○ | 0.01 | ○ | | X | 82 |
| S-VHS JPN F_S_IN | X | S1 | ○ | 0.01 | X | ○ | 0.01 | ○ | | X | 82 |
| S-VHS US F_S_IN | X | S1 | ○ | 0Ω | X | X | 0Ω | ○ | | X | 82 |
| S-VHS US | X | S1 | X | X | X | X | 0Ω | ○ | | X | 82 |
| VHS | X | X | X | X | X | X | X | X | | ○ | 75 |

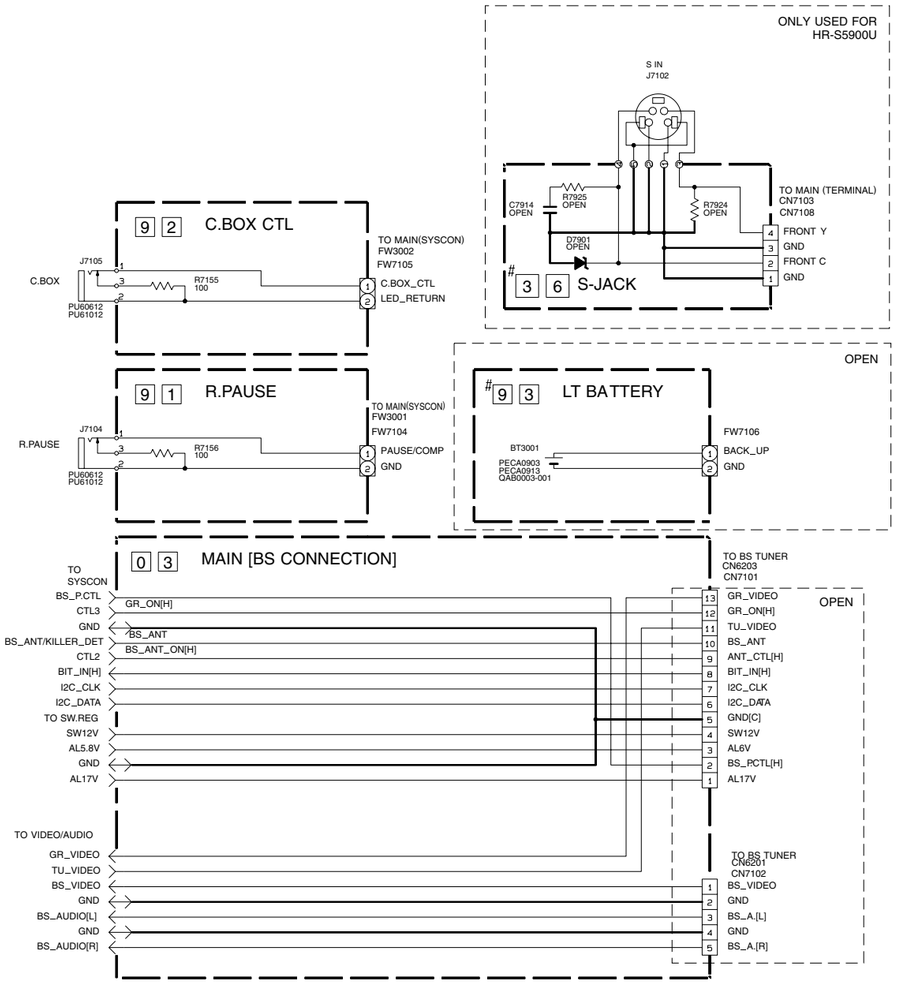
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/

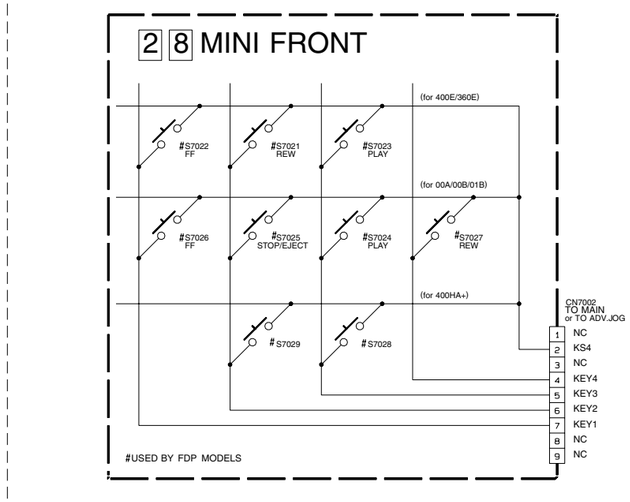
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

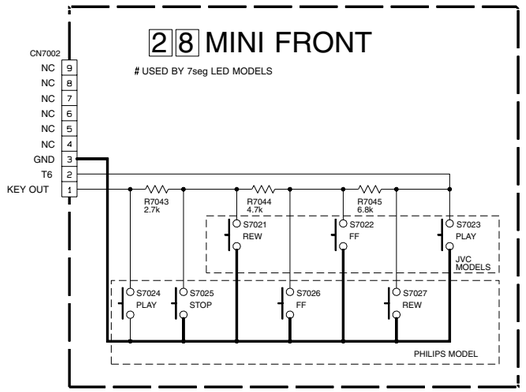
p20206001a_rev0

## 4.9 MAIN (BS CONNECTION), S-JACK, R.PAUSE AND C.BOX CTL SCHEMATIC DIAGRAMS

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




0 3

| | BS MODELS | GR MODELS |
|---|---|---|
| CN7101 | 1-10 | 1-13 |

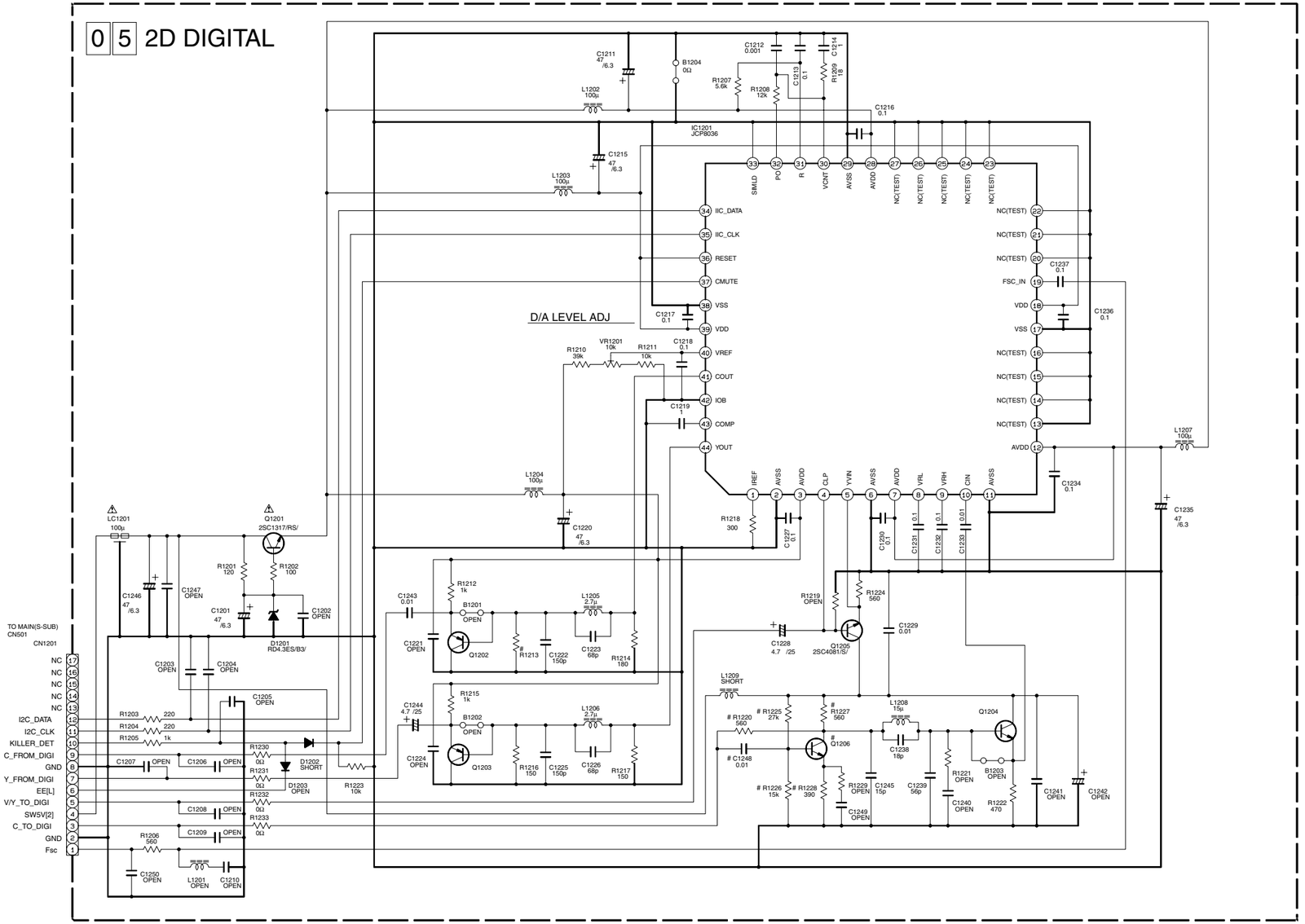
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20205001a_rev0

## 4.10 2D DIGITAL SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




# DIFFERENCE TABLE

| SYMBOL / MODEL | Q1206 R1225-R1228 C1248 | R1220 | R1213 |
|---|---|---|---|
| PCEC | ○ | X | 150 |
| OTHER | X | ○ | 180 |

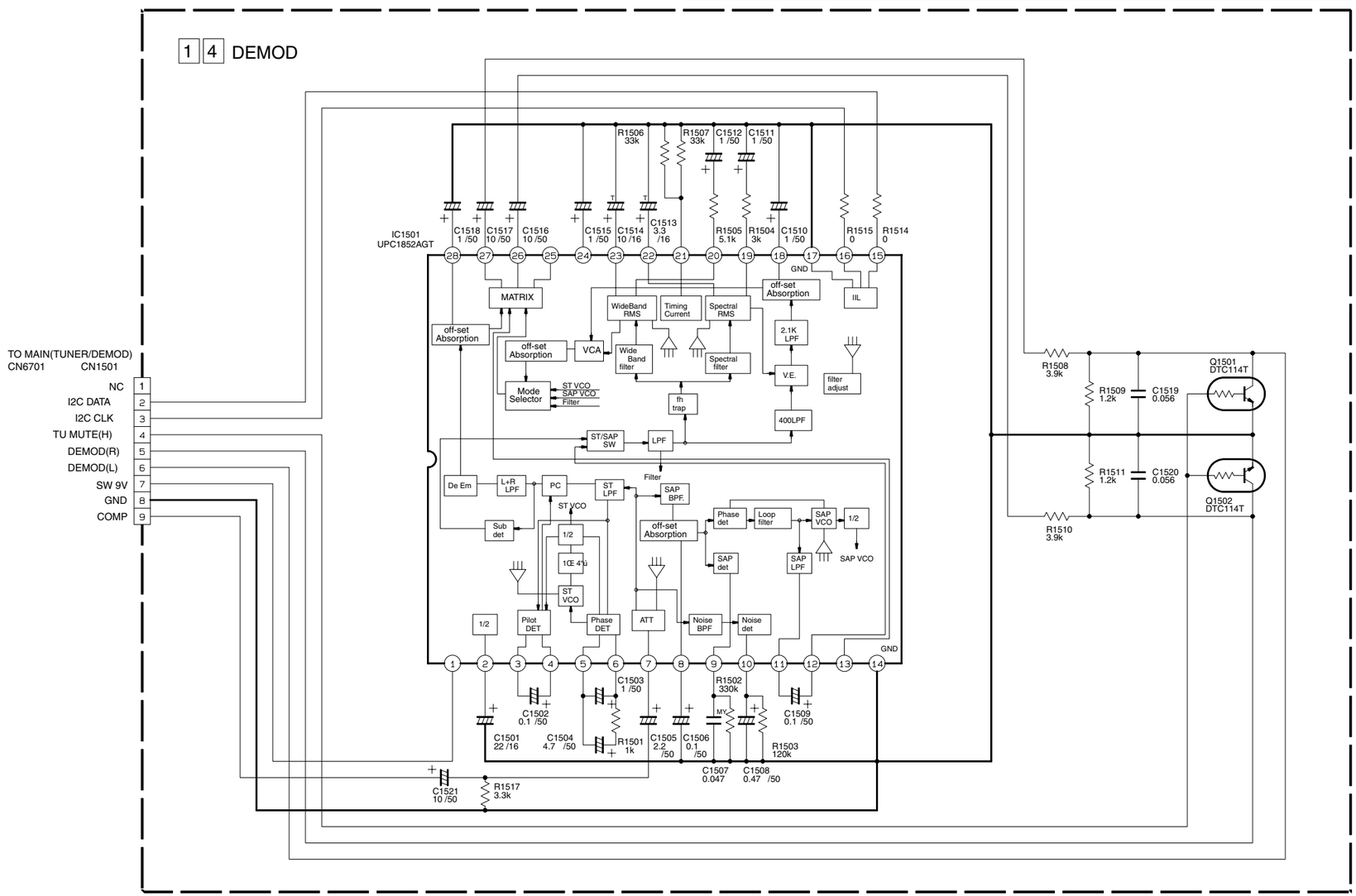
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.
ALL NPN TYPE TRANSISTORS ARE 2SC4081/QRS/.
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20211001a_rev0

## 4.11 DEMODULATOR SCHEMATIC DIAGRAM

*Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.*




NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

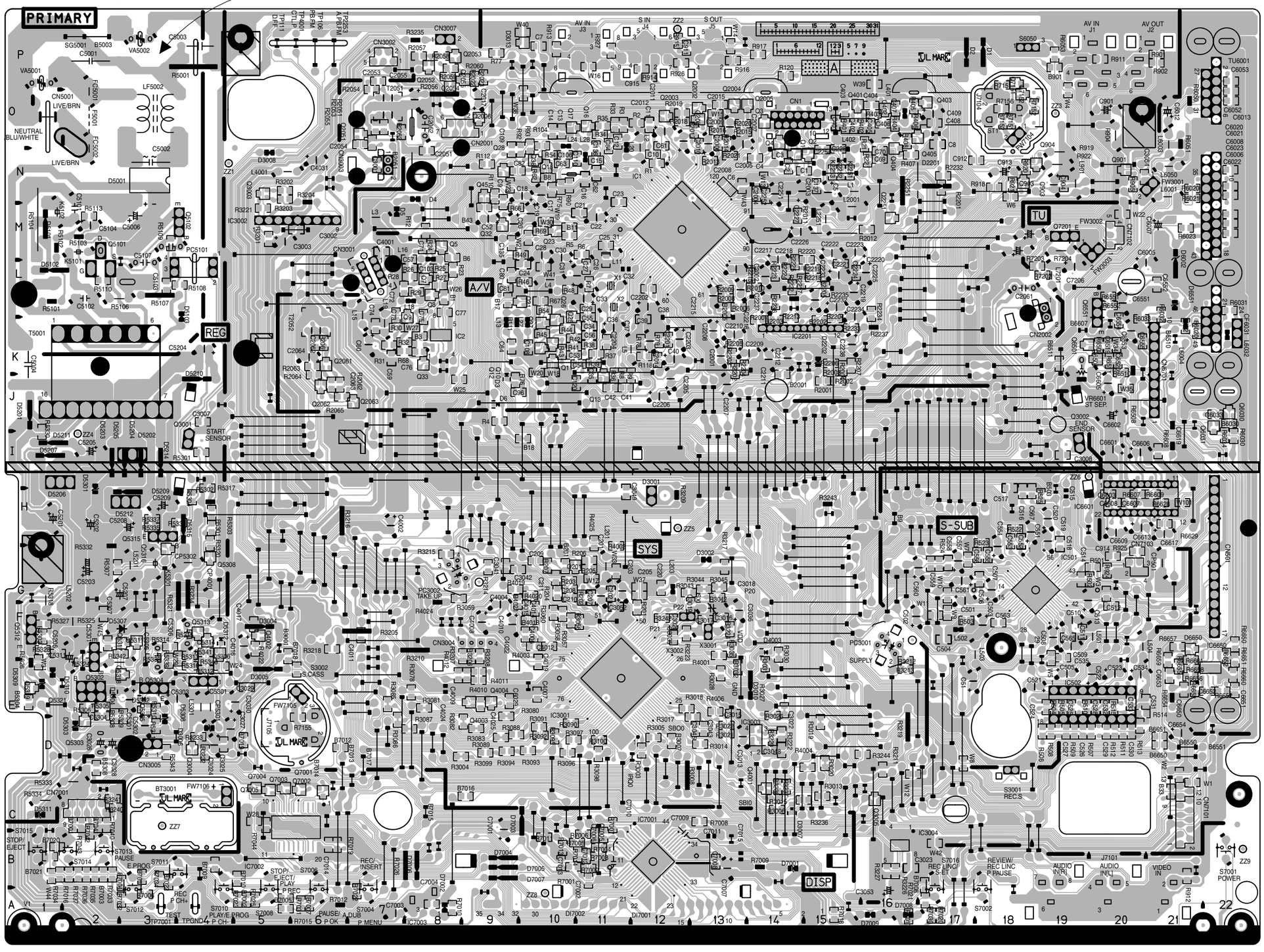
ELECTROLYTIC
CERAMIC
TANTAL

p97596_rev0

## 4.12 MAIN, R.PAUSE AND C.BOX CTL CIRCUIT BOARDS

**<03>MAIN,<91>R.PAUSE,<92>C.BOX CTL**
**LPB10134-001E**

CAUTION :
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S).
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE CP(S) MANUFACTURED BY ROHM.
ATTENTION :
REPLACER PAR DES FUSIBLE DE MEME TYPE.



## COMPONENT PARTS LOCATION GUIDE
## <MAIN, R.PAUSE AND C.BOX CTL >

| REF.NO. | LOCATION | | |
|---|---|---|---|
| **CAPACITOR** | | | |
| C1 | B | C | 15N |
| C2 | B | C | 14N |
| C3 | B | C | 14N |
| C4 | B | C | 14N |
| C5 | A | D | 15N |
| C6 | B | C | 13N |
| C7 | B | C | 10P |
| C8 | B | C | 17O |
| C9 | B | C | 9N |
| C10 | B | C | 12N |
| C11 | B | C | 12O |
| C12 | B | C | 11O |
| C13 | B | C | 10O |
| C14 | B | C | 10O |
| C15 | B | C | 11N |
| C16 | B | C | 11N |
| C17 | A | D | 10N |
| C18 | A | D | 10N |
| C19 | A | D | 10M |
| C20 | A | D | 9M |
| C21 | B | C | 11M |
| C22 | A | D | 11M |
| C23 | B | C | 11N |
| C24 | B | C | 10L |
| C25 | B | C | 11M |
| C26 | B | C | 11M |
| C27 | B | C | 11L |
| C28 | A | D | 10M |
| C29 | B | C | 11L |
| C30 | A | D | 10M |
| C31 | A | D | 11L |
| C32 | A | D | 11L |
| C33 | A | D | 11L |
| C34 | B | C | 11K |
| C35 | B | C | 11J |
| C36 | A | D | 11K |
| C37 | A | D | 12K |
| C38 | A | D | 12L |
| C39 | B | C | 12K |
| C40 | A | D | 12K |
| C41 | B | C | 11J |
| C42 | B | C | 11J |
| C51 | A | D | 17E |
| C52 | A | D | 9M |
| C53 | B | C | 10K |
| C54 | B | C | 11K |
| C55 | B | C | 11L |
| C56 | B | C | 11K |
| C57 | B | C | 8M |
| C59 | B | C | 7K |
| C60 | A | D | 7K |
| C61 | B | C | 12O |
| C62 | B | C | 11N |
| C63 | B | C | 10N |
| C64 | B | C | 9K |
| C69 | B | C | 16N |
| C70 | B | C | 16N |
| C71 | B | C | 8M |
| C72 | B | C | 7L |
| C73 | B | C | 7L |
| C74 | B | C | 7K |
| C75 | B | C | 8L |
| C76 | B | C | 8K |
| C77 | B | C | 8L |
| C80 | B | C | 9L |
| C81 | B | C | 9L |
| C82 | B | C | 9N |
| C84 | B | C | 11N |
| C96 | B | C | 10J |
| C103 | B | C | 8L |
| C106 | B | C | 10N |
| C108 | B | C | 10K |
| C109 | B | C | 9N |
| C110 | B | C | 11N |
| C120 | B | C | 11J |
| C135 | B | C | 9M |
| C136 | B | C | 11N |
| C137 | B | C | 15N |
| C201 | A | D | 11G |
| C202 | B | C | 11G |
| C203 | A | D | 11G |
| C205 | B | C | 12G |
| C207 | B | C | 11G |
| C208 | B | C | 10G |
| C209 | B | C | 10G |
| C210 | B | C | 10G |
| C211 | B | C | 10G |
| C220 | B | C | 12G |
| C401 | B | C | 15O |
| C402 | B | C | 15O |
| C403 | B | C | 15O |
| C404 | B | C | 16O |
| C405 | B | C | 16O |
| C406 | B | C | 16O |
| C407 | B | C | 16O |
| C408 | B | C | 17O |
| C409 | A | D | 17O |
| C501 | A | D | 17G |
| C502 | A | D | 16F |
| C503 | A | D | 18F |
| C504 | B | C | 17F |
| C505 | A | D | 19E |
| C506 | B | C | 18G |
| C507 | A | D | 18G |
| C508 | A | D | 19F |
| C509 | A | D | 19F |
| C510 | A | D | 19F |
| C511 | B | C | 19F |
| C512 | B | C | 20F |
| C513 | A | D | 19F |
| C514 | B | C | 19G |
| C515 | A | D | 19H |
| C516 | B | C | 18H |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| C517 | B | C | 18I |
| C518 | B | C | 19H |
| C519 | A | D | 19G |
| C520 | A | D | 19H |
| C521 | A | D | 19E |
| C522 | A | D | 20E |
| C523 | A | D | 20E |
| C524 | B | C | 19E |
| C525 | B | C | 19E |
| C526 | B | C | 19D |
| C527 | B | C | 19D |
| C528 | B | C | 20E |
| C529 | B | C | 20D |
| C530 | B | C | 20D |
| C531 | B | C | 21E |
| C532 | B | C | 20E |
| C533 | B | C | 20E |
| C534 | A | D | 20E |
| C535 | B | C | 19F |
| C551 | A | D | 18H |
| C552 | B | C | 18H |
| C553 | B | C | 18H |
| C554 | A | D | 18G |
| C555 | B | C | 18G |
| C556 | B | C | 18G |
| C557 | A | D | 17G |
| C558 | B | C | 17G |
| C559 | B | C | 17G |
| C560 | A | D | 17G |
| C561 | A | D | 17G |
| C563 | B | C | 18F |
| C565 | B | C | 19F |
| C567 | B | C | 19H |
| C901 | A | D | 20O |
| C903 | A | D | 19N |
| C904 | B | C | 19N |
| C911 | B | C | 12P |
| C912 | B | C | 18N |
| C913 | A | D | 18N |
| C914 | B | C | 20G |
| C915 | B | C | 12P |
| C2001 | A | D | 13K |
| C2002 | A | D | 14L |
| C2003 | A | D | 14N |
| C2004 | B | C | 14N |
| C2005 | A | D | 14O |
| C2006 | B | C | 13O |
| C2007 | A | D | 13O |
| C2008 | A | D | 13N |
| C2009 | B | C | 13O |
| C2010 | B | C | 13O |
| C2011 | A | D | 12O |
| C2012 | A | D | 12O |
| C2014 | B | C | 12K |
| C2015 | B | C | 13O |
| C2017 | A | D | 9O |
| C2051 | B | C | 8N |
| C2052 | A | D | 8O |
| C2053 | B | C | 7P |
| C2054 | B | C | 7O |
| C2055 | A | D | 8O |
| C2061 | A | D | 19L |
| C2062 | B | C | 6K |
| C2063 | B | C | 6J |
| C2064 | A | D | 6K |
| C2201 | B | C | 12K |
| C2202 | B | C | 12L |
| C2203 | A | D | 12K |
| C2204 | B | C | 11K |
| C2205 | A | D | 12J |
| C2206 | A | D | 12J |
| C2207 | A | D | 13J |
| C2208 | A | D | 13K |
| C2209 | A | D | 13K |
| C2210 | A | D | 13K |
| C2211 | A | D | 14K |
| C2212 | A | D | 14K |
| C2215 | A | D | 13L |
| C2216 | A | D | 13L |
| C2217 | A | D | 13L |
| C2218 | A | D | 14M |
| C2219 | A | D | 15L |
| C2220 | A | D | 15L |
| C2221 | B | C | 15L |
| C2222 | A | D | 15M |
| C2223 | A | D | 15M |
| C2224 | B | C | 15L |
| C2225 | A | D | 16L |
| C2226 | A | D | 14M |
| C2227 | B | C | 14M |
| C2232 | A | D | 15L |
| C2233 | A | D | 15L |
| C2234 | A | D | 15L |
| C2235 | A | D | 18M |
| C2236 | A | D | 18M |
| C2237 | A | D | 14L |
| C2238 | A | D | 15K |
| C2251 | A | D | 14N |
| C2252 | B | C | 14N |
| C2253 | B | C | 15N |
| C2254 | B | C | 15N |
| C3001 | B | C | 7N |
| C3002 | B | C | 6M |
| C3003 | A | D | 5M |
| C3007 | B | C | 4J |
| C3008 | B | C | 19I |
| C3013 | A | D | 13D |
| C3015 | B | C | 13E |
| C3016 | B | C | 13F |
| C3017 | B | C | 13F |
| C3018 | A | D | 13F |
| C3019 | B | C | 13F |
| C3020 | B | C | 12F |
| C3022 | B | C | 14D |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| C3023 | B | C | 16B |
| C3024 | A | D | 4D |
| C3025 | B | C | 4D |
| C3026 | A | D | 2D |
| C3027 | A | D | 4D |
| C3028 | A | D | 2D |
| C3029 | B | C | 5E |
| C3030 | A | D | 5E |
| C3035 | B | C | 12F |
| C3036 | A | D | 13F |
| C3041 | B | C | 9G |
| C3042 | B | C | 9G |
| C3043 | B | C | 13D |
| C3045 | B | C | 13D |
| C3048 | B | C | 14D |
| C3049 | B | C | 11H |
| C3052 | B | C | 11F |
| C3053 | A | D | 16A |
| C3054 | B | C | 20N |
| C4001 | B | C | 7M |
| C4002 | A | D | 7H |
| C4004 | A | D | 9F |
| C4006 | B | C | 10F |
| C4007 | B | C | 10E |
| C4008 | A | D | 9F |
| C4009 | B | C | 9E |
| C4010 | A | D | 9F |
| C4011 | B | C | 7F |
| C4012 | B | C | 10F |
| C4014 | B | C | 10F |
| C4015 | B | C | 10F |
| C4016 | A | D | 5F |
| C4017 | B | C | 5F |
| C4019 | B | C | 10E |
| C4022 | B | C | 10F |
| C4024 | A | D | 8E |
| C4025 | B | C | 9E |
| C4031 | A | D | 6N |
| C5001 | A | D | 2P |
| C5002 | A | D | 4N |
| C5003 | A | D | 4P |
| C5004 | A | D | 1K |
| C5006 | A | D | 3M |
| C5101 | A | D | 2N |
| C5102 | A | D | 2L |
| C5103 | B | C | 3L |
| C5104 | A | D | 2M |
| C5105 | A | D | 3M |
| C5107 | A | D | 3L |
| C5201 | A | D | 1H |
| C5202 | A | D | 2H |
| C5203 | A | D | 2G |
| C5204 | A | D | 4K |
| C5205 | A | D | 2I |
| C5206 | A | D | 2E |
| C5207 | A | D | 3G |
| C5208 | A | D | 3H |
| C5209 | A | D | 3H |
| C5301 | A | D | 3E |
| C5302 | A | D | 3D |
| C5303 | A | D | 3E |
| C5304 | B | C | 2E |
| C5305 | A | D | 3F |
| C5306 | A | D | 4F |
| C5307 | B | C | 2F |
| C5311 | B | C | 1F |
| C6005 | A | D | 20L |
| C6006 | B | C | 22M |
| C6007 | A | D | 21M |
| C6008 | B | C | 22M |
| C6012 | A | D | 21O |
| C6013 | B | C | 22O |
| C6020 | B | C | 22N |
| C6021 | B | C | 22N |
| C6022 | B | C | 22N |
| C6023 | B | C | 22M |
| C6029 | B | C | 9E |
| C6033 | B | C | 22J |
| C6052 | B | C | 22O |
| C6053 | B | C | 22P |
| C6519 | B | C | 20K |
| C6520 | B | C | 20K |
| C6551 | A | D | 20L |
| C6552 | B | C | 21L |
| C6553 | A | D | 20K |
| C6554 | B | C | 20K |
| C6555 | B | C | 20K |
| C6601 | A | D | 20I |
| C6602 | A | D | 20J |
| C6603 | B | C | 20H |
| C6605 | A | D | 20J |
| C6606 | A | D | 20I |
| C6607 | B | C | 20H |
| C6608 | B | C | 20H |
| C6609 | A | D | 20H |
| C6613 | A | D | 20H |
| C6617 | A | D | 21H |
| C6619 | A | D | 21I |
| C6650 | B | C | 21E |
| C6651 | B | C | 22E |
| C6652 | B | C | 22E |
| C6653 | B | C | 21E |
| C6654 | A | D | 21D |
| C7001 | A | D | 9B |
| C7002 | B | C | 11B |
| C7003 | A | D | 7A |
| C7004 | B | C | 8A |
| C7005 | B | C | 11B |
| C7006 | B | C | 11B |
| C7007 | A | D | 13B |
| C7008 | B | C | 13B |
| C7009 | A | D | 12C |
| C7010 | A | D | 11B |
| C7011 | A | D | 13B |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| C7012 | B | C | 11B |
| C7013 | B | C | 10B |
| C7014 | B | C | 6B |
| C7015 | A | D | 13B |
| C7206 | A | D | 19L |
| **CONNECTOR** | | | |
| CN1 | A | D | 14O |
| CN501 | A | D | 22I |
| CN2001 | A | D | 9O |
| CN2002 | A | D | 19L |
| CN3001 | A | D | 7L |
| CN3002 | A | D | 7P |
| CN3003 | A | D | 7N |
| CN3004 | A | D | 9F |
| CN3005 | A | D | 3D |
| CN3007 | A | D | 8P |
| CN5001 | A | D | 1O |
| CN6701 | A | D | 21J |
| CN7001 | A | D | 2C |
| CN7101 | A | D | 21B |
| CN7102 | A | D | 20M |
| CN7103 | A | D | 20G |
| **DIODE** | | | |
| D1 | A | D | 18P |
| D2 | A | D | 17P |
| D3 | B | C | 9J |
| D4 | A | D | 8N |
| D5 | A | D | 7M |
| D6 | B | C | 9J |
| D2201 | A | D | 17N |
| D2202 | A | D | 15K |
| D3001 | A | D | 12H |
| D3002 | A | D | 13G |
| D3004 | A | D | 5F |
| D3005 | A | D | 5E |
| D3006 | A | D | 4D |
| D3007 | B | C | 14C |
| D3008 | A | D | 5N |
| D3010 | A | D | 14E |
| D3013 | B | C | 10P |
| D4003 | B | C | 14F |
| D5001 | B | C | 3N |
| D5101 | A | D | 1M |
| D5102 | A | D | 2L |
| D5103 | A | D | 4K |
| D5201 | A | D | 1J |
| D5202 | A | D | 3I |
| D5203 | A | D | 2I |
| D5204 | A | D | 3I |
| D5205 | A | D | 3I |
| D5206 | A | D | 2I |
| D5207 | A | D | 2I |
| D5209 | A | D | 3H |
| D5210 | A | D | 4J |
| D5211 | A | D | 2I |
| D5212 | A | D | 2H |
| D5214 | A | D | 3I |
| D5301 | A | D | 2I |
| D5302 | B | C | 3E |
| D5303 | A | D | 2E |
| D5304 | B | C | 2E |
| D5307 | A | D | 2F |
| D5308 | A | D | 3D |
| D5309 | A | D | 1E |
| D5310 | A | D | 1E |
| D5311 | A | D | 1C |
| D5312 | B | C | 4F |
| D5315 | A | D | 4H |
| D6002 | A | D | 21L |
| D6551 | A | D | 21L |
| D6650 | B | C | 21F |
| D7001 | A | D | 14B |
| D7002 | A | D | 8A |
| D7003 | A | D | 10B |
| D7004 | A | D | 10B |
| D7005 | A | D | 10B |
| D7006 | A | D | 8B |
| D7007 | A | D | 10B |
| D7008 | A | D | 16A |
| D7009 | A | D | 16A |
| **IC** | | | |
| IC1 | B | C | 12M |
| IC2 | B | C | 8K |
| IC501 | B | C | 19G |
| IC502 | A | D | 19E |
| IC2201 | A | D | 14K |
| IC3001 | B | C | 11E |
| IC3002 | A | D | 5M |
| IC3003 | B | C | 14D |
| IC3004 | B | C | 16B |
| IC5301 | A | D | 4E |
| IC6601 | A | D | 20I |
| IC6650 | B | C | 22E |
| IC7001 | B | C | 12B |
| IC7002 | B | C | 6C |
| IC7003 | A | D | 8A |
| **JACK** | | | |
| J1 | A | D | 20P |
| J2 | A | D | 21P |
| J3 | A | D | 11P |
| J4 | A | D | 12P |
| J5 | A | D | 13P |
| J7101 | A | D | 20A |
| J7104 | A | D | 19O |
| J7105 | A | D | 5D |
| **COIL** | | | |
| L1 | A | D | 16N |
| L2 | A | D | 12O |
| L3 | A | D | 7M |
| L4 | A | D | 10L |
| L5 | A | D | 11K |
| L11 | A | D | 11M |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| L13 | A | D | 9K |
| L15 | A | D | 7L |
| L16 | A | D | 8M |
| L18 | A | D | 7L |
| L19 | A | D | 7K |
| L20 | A | D | 11O |
| L24 | A | D | 11N |
| L27 | A | D | 10K |
| L28 | A | D | 11N |
| L201 | A | D | 11G |
| L203 | A | D | 12G |
| L401 | A | D | 16O |
| L402 | A | D | 16O |
| L501 | A | D | 20F |
| L502 | A | D | 17F |
| L503 | A | D | 18F |
| L504 | A | D | 20F |
| L901 | A | D | 19N |
| L2001 | A | D | 16M |
| L2251 | A | D | 15M |
| L4001 | A | D | 6N |
| L5201 | A | D | 3G |
| L5202 | A | D | 2F |
| L5301 | A | D | 4D |
| L6001 | A | D | 21N |
| L6003 | A | D | 21O |
| L6004 | A | D | 21K |
| L6032 | A | D | 22K |
| L6050 | A | D | 21N |
| L7201 | A | D | 19L |
| **TRANSISTOR** | | | |
| Q1 | B | C | 14N |
| Q2 | B | C | 15N |
| Q3 | B | C | 14O |
| Q4 | B | C | 14O |
| Q5 | B | C | 8M |
| Q7 | B | C | 8L |
| Q8 | B | C | 8L |
| Q9 | B | C | 8L |
| Q10 | B | C | 10K |
| Q11 | B | C | 10K |
| Q12 | B | C | 10K |
| Q13 | B | C | 11J |
| Q16 | B | C | 11O |
| Q17 | B | C | 10O |
| Q18 | B | C | 10N |
| Q21 | B | C | 10L |
| Q23 | B | C | 10M |
| Q25 | B | C | 10L |
| Q26 | B | C | 10K |
| Q27 | B | C | 10K |
| Q28 | B | C | 9N |
| Q32 | B | C | 9M |
| Q33 | B | C | 8K |
| Q38 | B | C | 10N |
| Q45 | B | C | 9N |
| Q201 | B | C | 11G |
| Q401 | B | C | 15O |
| Q402 | B | C | 16O |
| Q403 | B | C | 17O |
| Q404 | B | C | 16N |
| Q405 | B | C | 17O |
| Q901 | B | C | 20N |
| Q903 | B | C | 18N |
| Q904 | B | C | 19N |
| Q2001 | B | C | 13O |
| Q2002 | B | C | 13O |
| Q2003 | B | C | 12O |
| Q2004 | B | C | 13O |
| Q2005 | B | C | 14O |
| Q2006 | B | C | 9O |
| Q2051 | B | C | 7O |
| Q2052 | B | C | 8P |
| Q2053 | B | C | 8P |
| Q2054 | B | C | 8P |
| Q2055 | B | C | 9P |
| Q2061 | B | C | 6K |
| Q2062 | B | C | 6J |
| Q2063 | B | C | 7J |
| Q2251 | B | C | 16M |
| Q3001 | A | D | 4I |
| Q3002 | A | D | 19I |
| Q3003 | B | C | 5N |
| Q3004 | B | C | 4D |
| Q3005 | B | C | 16C |
| Q4001 | B | C | 14C |
| Q4002 | B | C | 5F |
| Q4003 | B | C | 9E |
| Q4004 | B | C | 9E |
| Q5101 | A | D | 2L |
| Q5102 | A | D | 4M |
| Q5301 | A | D | 2F |
| Q5302 | A | D | 2E |
| Q5303 | B | C | 2D |
| Q5304 | A | D | 3E |
| Q5305 | B | C | 3E |
| Q5306 | B | C | 4F |
| Q5308 | B | C | 4G |
| Q5311 | B | C | 3F |
| Q5312 | A | D | 1F |
| Q5313 | B | C | 4F |
| Q5314 | B | C | 4F |
| Q5315 | A | D | 3H |
| Q5316 | B | C | 3G |
| Q5317 | B | C | 3F |
| Q5318 | B | C | 3E |
| Q5319 | B | C | 1E |
| Q5321 | A | D | 2E |
| Q6030 | B | C | 22J |
| Q6031 | B | C | 22J |
| Q6501 | B | C | 19K |
| Q6502 | B | C | 20K |
| Q6551 | A | D | 20K |
| Q7001 | B | C | 6C |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| Q7002 | B | C | 6C |
| Q7003 | B | C | 5C |
| Q7004 | B | C | 5C |
| Q7005 | B | C | 5C |
| Q7151 | B | C | 18P |
| Q7152 | B | C | 18O |
| Q7201 | A | D | 19M |
| **RESISTOR** | | | |
| R1 | B | C | 12N |
| R2 | B | C | 12O |
| R3 | B | C | 11O |
| R4 | B | C | 9J |
| R5 | B | C | 10M |
| R6 | B | C | 11M |
| R7 | B | C | 11L |
| R8 | B | C | 11J |
| R9 | B | C | 11J |
| R12 | B | C | 8M |
| R21 | B | C | 16O |
| R22 | B | C | 16N |
| R23 | B | C | 8L |
| R24 | B | C | 8M |
| R25 | B | C | 8L |
| R26 | B | C | 8L |
| R27 | B | C | 8L |
| R28 | B | C | 8L |
| R29 | B | C | 8L |
| R30 | B | C | 7K |
| R31 | B | C | 7K |
| R32 | B | C | 8K |
| R33 | B | C | 11O |
| R34 | B | C | 11O |
| R35 | B | C | 11O |
| R36 | B | C | 11J |
| R37 | B | C | 11K |
| R38 | B | C | 11K |
| R39 | B | C | 11K |
| R41 | B | C | 10K |
| R42 | B | C | 10K |
| R43 | B | C | 10K |
| R44 | B | C | 10K |
| R45 | B | C | 10K |
| R46 | B | C | 10L |
| R48 | B | C | 10L |
| R49 | B | C | 10M |
| R54 | B | C | 10N |
| R62 | B | C | 10N |
| R66 | B | C | 9M |
| R67 | B | C | 10L |
| R68 | B | C | 8K |
| R69 | B | C | 10M |
| R75 | B | C | 10N |
| R76 | B | C | 9J |
| R77 | B | C | 9P |
| R78 | B | C | 12K |
| R79 | B | C | 12K |
| R90 | B | C | 10N |
| R92 | B | C | 10N |
| R93 | B | C | 10N |
| R104 | B | C | 10O |
| R110 | B | C | 9N |
| R111 | A | D | 9L |
| R112 | B | C | 9N |
| R118 | B | C | 12K |
| R120 | B | C | 14P |
| R201 | B | C | 12F |
| R202 | B | C | 11G |
| R203 | B | C | 10G |
| R204 | B | C | 10G |
| R205 | B | C | 11G |
| R206 | B | C | 11G |
| R207 | B | C | 10G |
| R401 | B | C | 15O |
| R402 | B | C | 16O |
| R403 | B | C | 16O |
| R404 | B | C | 16O |
| R405 | B | C | 16O |
| R406 | B | C | 16O |
| R407 | B | C | 16N |
| R408 | B | C | 16O |
| R501 | B | C | 20G |
| R502 | B | C | 20G |
| R503 | B | C | 17F |
| R504 | B | C | 19E |
| R505 | B | C | 19E |
| R506 | B | C | 19D |
| R507 | B | C | 20D |
| R508 | B | C | 19D |
| R509 | B | C | 19D |
| R510 | B | C | 19E |
| R511 | B | C | 20D |
| R512 | B | C | 20D |
| R513 | B | C | 20D |
| R514 | B | C | 20E |
| R515 | B | C | 20E |
| R522 | B | C | 18H |
| R523 | B | C | 18H |
| R524 | B | C | 17G |
| R525 | B | C | 19H |
| R901 | B | C | 21P |
| R902 | B | C | 21P |
| R904 | A | D | 20O |
| R905 | B | C | 20N |
| R911 | B | C | 20P |
| R912 | B | C | 21B |
| R913 | B | C | 10P |
| R914 | B | C | 12P |
| R915 | B | C | 12P |
| R916 | B | C | 13P |
| R917 | B | C | 14P |
| R918 | B | C | 18N |
| R919 | A | D | 19N |
| R920 | B | C | 18N |
| R921 | B | C | 18N |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| R922 | A | D | 19N |
| R924 | B | C | 20G |
| R925 | B | C | 20G |
| R926 | B | C | 12P |
| R927 | B | C | 11P |
| R2001 | B | C | 15J |
| R2002 | B | C | 15J |
| R2003 | B | C | 15K |
| R2004 | B | C | 15K |
| R2005 | B | C | 13L |
| R2006 | B | C | 13L |
| R2007 | B | C | 14K |
| R2008 | B | C | 13L |
| R2009 | B | C | 13L |
| R2010 | B | C | 14L |
| R2011 | A | D | 15M |
| R2012 | B | C | 16M |
| R2013 | B | C | 13N |
| R2014 | B | C | 13O |
| R2015 | B | C | 13O |
| R2016 | B | C | 13O |
| R2017 | B | C | 13O |
| R2018 | B | C | 12O |
| R2019 | B | C | 12O |
| R2020 | B | C | 13O |
| R2021 | B | C | 13N |
| R2022 | B | C | 9P |
| R2023 | B | C | 9P |
| R2051 | B | C | 7O |
| R2052 | B | C | 7O |
| R2053 | B | C | 7O |
| R2054 | B | C | 7O |
| R2055 | B | C | 7O |
| R2056 | A | D | 9O |
| R2057 | B | C | 8P |
| R2058 | B | C | 8P |
| R2059 | B | C | 8P |
| R2060 | B | C | 8P |
| R2061 | B | C | 6K |
| R2062 | B | C | 6J |
| R2063 | B | C | 6K |
| R2064 | B | C | 6J |
| R2065 | B | C | 6J |
| R2201 | B | C | 17N |
| R2202 | B | C | 13K |
| R2203 | B | C | 13K |
| R2204 | B | C | 13K |
| R2205 | B | C | 13K |
| R2206 | B | C | 15K |
| R2207 | B | C | 15K |
| R2213 | B | C | 14K |
| R2215 | B | C | 14L |
| R2217 | B | C | 14L |
| R2218 | B | C | 15L |
| R2219 | B | C | 15L |
| R2220 | B | C | 15M |
| R2222 | B | C | 14L |
| R2223 | B | C | 14L |
| R2224 | B | C | 14L |
| R2225 | B | C | 14L |
| R2232 | B | C | 17N |
| R2233 | B | C | 15K |
| R2234 | B | C | 16L |
| R2235 | A | D | 14L |
| R2236 | B | C | 14L |
| R2237 | A | D | 16K |
| R2251 | A | D | 16N |
| R3003 | B | C | 12D |
| R3004 | B | C | 8D |
| R3005 | B | C | 12D |
| R3006 | B | C | 14C |
| R3007 | B | C | 12D |
| R3008 | A | D | 12C |
| R3013 | B | C | 15C |
| R3014 | B | C | 13D |
| R3015 | B | C | 14C |
| R3017 | B | C | 13D |
| R3018 | B | C | 12E |
| R3019 | B | C | 15D |
| R3020 | B | C | 15D |
| R3021 | B | C | 13D |
| R3022 | B | C | 13D |
| R3026 | B | C | 14E |
| R3027 | B | C | 14E |
| R3028 | B | C | 13E |
| R3030 | B | C | 14F |
| R3031 | B | C | 14E |
| R3032 | B | C | 13E |
| R3035 | B | C | 13F |
| R3042 | B | C | 13G |
| R3043 | B | C | 12G |
| R3044 | B | C | 13G |
| R3045 | B | C | 13G |
| R3056 | B | C | 11F |
| R3057 | B | C | 10F |
| R3058 | B | C | 10F |
| R3059 | B | C | 8G |
| R3060 | B | C | 10F |
| R3078 | B | C | 8E |
| R3080 | B | C | 9E |
| R3081 | B | C | 8E |
| R3082 | B | C | 9D |
| R3083 | B | C | 9D |
| R3085 | B | C | 7E |
| R3086 | B | C | 7D |
| R3087 | B | C | 8D |
| R3088 | B | C | 9D |
| R3089 | B | C | 9D |
| R3090 | B | C | 10D |
| R3091 | B | C | 10D |
| R3092 | B | C | 10D |
| R3093 | B | C | 10D |
| R3094 | B | C | 9D |
| R3095 | B | C | 10D |

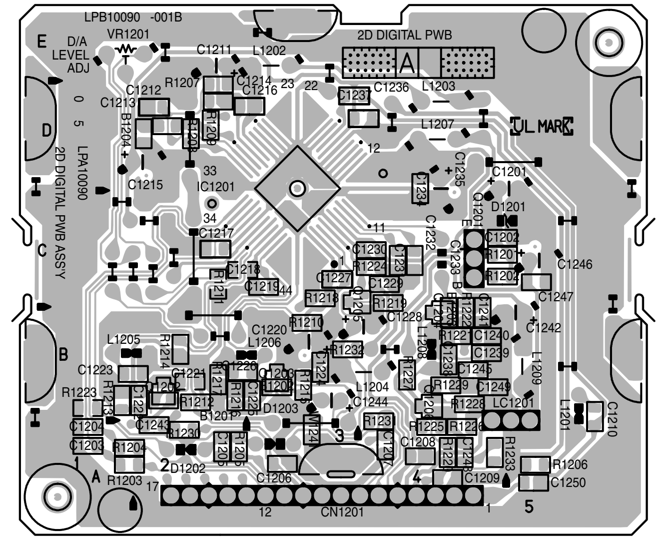
| REF.NO. | LOCATION | | |
|---|---|---|---|
| R3096 | B | C | 10D |
| R3097 | B | C | 10D |
| R3098 | B | C | 11D |
| R3099 | B | C | 9D |
| R3100 | B | C | 11D |
| R3201 | B | C | 5M |
| R3202 | B | C | 5N |
| R3203 | B | C | 5N |
| R3204 | A | D | 6N |
| R3205 | A | D | 6F |
| R3206 | B | C | 9F |
| R3207 | B | C | 9F |
| R3208 | B | C | 9F |
| R3209 | A | D | 12H |
| R3210 | A | D | 8F |
| R3211 | B | C | 16D |
| R3212 | B | C | 16E |
| R3213 | B | C | 16E |
| R3214 | B | C | 9G |
| R3215 | B | C | 8G |
| R3216 | A | D | 6H |
| R3217 | B | C | 13G |
| R3218 | B | C | 6F |
| R3219 | A | D | 16D |
| R3220 | B | C | 14D |
| R3221 | B | C | 5M |
| R3222 | B | C | 14D |
| R3223 | B | C | 12F |
| R3224 | B | C | 13F |
| R3226 | B | C | 16B |
| R3227 | B | C | 16B |
| R3232 | B | C | 4D |
| R3233 | B | C | 4D |
| R3234 | A | D | 4G |
| R3235 | A | D | 8P |
| R3236 | B | C | 15C |
| R3237 | B | C | 14C |
| R3238 | B | C | 14C |
| R3240 | B | C | 2C |
| R3241 | B | C | 2C |
| R3242 | B | C | 12F |
| R3243 | A | D | 15H |
| R3244 | B | C | 16D |
| R4001 | B | C | 13F |
| R4002 | B | C | 11G |
| R4003 | B | C | 10F |
| R4004 | B | C | 15D |
| R4006 | B | C | 13E |
| R4010 | B | C | 9E |
| R4011 | B | C | 9E |
| R4012 | B | C | 8E |
| R4018 | B | C | 10F |
| R4019 | B | C | 9G |
| R4020 | B | C | 10G |
| R4021 | B | C | 9G |
| R4022 | B | C | 5F |
| R4024 | A | D | 8G |
| R4025 | B | C | 11H |
| R5001 | A | D | 3P |
| R5101 | A | D | 1L |
| R5102 | A | D | 1M |
| R5103 | A | D | 2M |
| R5104 | A | D | 1N |
| R5106 | A | D | 2L |
| R5107 | A | D | 3L |
| R5108 | B | C | 4L |
| R5109 | B | C | 3M |
| R5110 | B | C | 2L |
| R5113 | B | C | 2M |
| R5301 | B | C | 4I |
| R5302 | B | C | 4I |
| R5303 | B | C | 4H |
| R5304 | B | C | 4H |
| R5305 | B | C | 2E |
| R5306 | B | C | 2E |
| R5307 | B | C | 2G |
| R5308 | B | C | 2E |
| R5309 | B | C | 3E |
| R5310 | B | C | 3E |
| R5311 | B | C | 3D |
| R5312 | B | C | 4E |
| R5313 | B | C | 4F |
| R5314 | B | C | 3F |
| R5315 | B | C | 4F |
| R5316 | B | C | 4E |
| R5317 | A | D | 4H |
| R5318 | A | D | 1G |
| R5320 | B | C | 4H |
| R5321 | A | D | 4G |
| R5324 | B | C | 2E |
| R5325 | A | D | 2E |
| R5326 | A | D | 1F |
| R5327 | B | C | 1F |
| R5328 | B | C | 1F |
| R5330 | B | C | 1I |
| R5332 | A | D | 3G |
| R5333 | A | D | 2C |
| R5334 | A | D | 1C |
| R5335 | B | C | 3H |
| R5336 | B | C | 4H |
| R5337 | B | C | 3H |
| R5338 | B | C | 3F |
| R5339 | B | C | 3E |
| R5340 | B | C | 4E |
| R5341 | B | C | 4F |
| R5342 | B | C | 3F |
| R5343 | B | C | 3D |
| R6020 | B | C | 21N |
| R6021 | B | C | 21N |
| R6023 | B | C | 21M |
| R6030 | B | C | 22I |
| R6031 | B | C | 22L |
| R6032 | B | C | 21L |
| R6033 | B | C | 20K |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| R6034 | B | C | 22I |
| R6050 | A | D | 21O |
| R6051 | A | D | 21O |
| R6053 | B | C | 19P |
| R6508 | A | D | 20J |
| R6509 | B | C | 20K |
| R6510 | B | C | 20K |
| R6511 | B | C | 20K |
| R6551 | B | C | 20L |
| R6552 | B | C | 20L |
| R6607 | B | C | 20H |
| R6608 | B | C | 21I |
| R6609 | B | C | 21H |
| R6628 | B | C | 21H |
| R6629 | B | C | 21H |
| R6650 | B | C | 22F |
| R6651 | B | C | 22E |
| R6652 | B | C | 22E |
| R6653 | B | C | 21E |
| R6654 | A | D | 21E |
| R6655 | B | C | 21E |
| R6656 | B | C | 21E |
| R6657 | B | C | 21F |
| R6658 | B | C | 21E |
| R6659 | B | C | 21E |
| R6660 | B | C | 22E |
| R6661 | B | C | 21E |
| R7001 | B | C | 10B |
| R7002 | B | C | 11B |
| R7003 | B | C | 11B |
| R7004 | B | C | 11B |
| R7005 | B | C | 11B |
| R7006 | B | C | 11B |
| R7007 | B | C | 11C |
| R7008 | B | C | 13C |
| R7009 | A | D | 14B |
| R7010 | B | C | 8A |
| R7011 | B | C | 10B |
| R7012 | A | D | 7A |
| R7013 | B | C | 10B |
| R7014 | B | C | 11B |
| R7015 | B | C | 5A |
| R7016 | B | C | 2B |
| R7017 | B | C | 16A |
| R7018 | B | C | 15A |
| R7019 | B | C | 6B |
| R7020 | B | C | 17A |
| R7021 | B | C | 17A |
| R7022 | B | C | 7A |
| R7023 | B | C | 5A |
| R7024 | B | C | 3B |
| R7025 | B | C | 5A |
| R7026 | A | D | 8B |
| R7030 | B | C | 17A |
| R7031 | B | C | 6A |
| R7032 | B | C | 3A |
| R7033 | B | C | 2B |
| R7034 | B | C | 1B |
| R7035 | B | C | 2B |
| R7036 | B | C | 2B |
| R7037 | B | C | 2B |
| R7040 | B | C | 2C |
| R7041 | B | C | 2C |
| R7042 | B | C | 2B |
| R7043 | B | C | 2C |
| R7044 | B | C | 5C |
| R7151 | B | C | 18P |
| R7152 | B | C | 19O |
| R7155 | B | C | 6D |
| R7156 | B | C | 18O |
| R7202 | B | C | 19L |
| R7203 | B | C | 19L |
| R7204 | A | D | 19M |
| VR6601 | A | D | 19K |
| **SWITCH** | | | |
| S3001 | A | D | 18C |
| S3002 | A | D | 6F |
| S6050 | A | D | 18P |
| S7001 | A | D | 22B |
| S7002 | A | D | 18B |
| S7004 | A | D | 7B |
| S7006 | A | D | 6B |
| S7008 | A | D | 5B |
| S7010 | A | D | 4B |
| S7011 | A | D | 4B |
| S7012 | A | D | 3B |
| S7013 | A | D | 2B |
| S7014 | A | D | 2B |
| S7015 | A | D | 1B |
| S7016 | A | D | 17B |
| **TEST POINT** | | | |
| TP106 | A | D | 6P |
| TP111 | A | D | 5P |
| TP2253 | A | D | 6P |
| TP4001 | A | D | 6P |
| TP7001 | A | D | 3A |
| TPGND | A | D | 4A |
| **OTHER** | | | |
| BT3001 | A | D | 3C |
| CF6031 | A | D | 22K |
| CP501 | A | D | 21G |
| CP4001 | A | D | 4G |
| CP5301 | A | D | 4E |
| CP5302 | A | D | 4G |
| DI7001 | A | D | 12A |
| DI7002 | A | D | 12A |
| F5001 | A | D | 2N |
| FC5001 | A | D | 2P |
| FC5002 | A | D | 2N |
| FW3001 | A | D | 21N |
| FW3002 | A | D | 19M |
| FW3003 | A | D | 20M |
| FW7104 | A | D | 18O |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| FW7105 | A | D | 6E |
| FW7106 | A | D | 4C |
| K2251 | B | C | 15N |
| K2252 | B | C | 15N |
| K2253 | B | C | 15N |
| K5101 | A | D | 2M |
| K5102 | A | D | 1N |
| K5301 | A | D | 3G |
| LF5002 | A | D | 4O |
| PC3001 | A | D | 16F |
| PC3002 | A | D | 8G |
| PC5101 | A | D | 4L |
| SG5001 | A | D | 1P |
| T2051 | A | D | 7O |
| T2052 | A | D | 6K |
| T5001 | A | D | 1K |
| TU6001 | A | D | 22P |
| VA5001 | A | D | 1P |
| VA5002 | A | D | 3P |
| X1 | A | D | 11L |
| X2 | A | D | 11L |
| X3001 | A | D | 13F |
| X3002 | A | D | 13F |

## 4.13 2D DIGITAL AND DEMODULATOR CIRCUIT BOARDS

### <05>2D DIGITAL
### LPB10090-001B




### COMPONENT PARTS LOCATION GUIDE
### <2D DIGITAL >

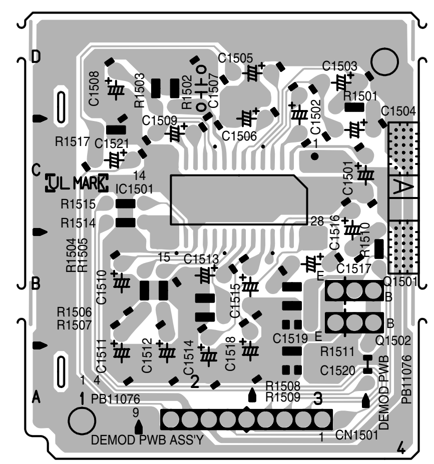
| REF.NO. | LOCATION | | |
|---|---|---|---|
| **CAPACITOR** | | | |
| C1201 | A | D | 5D |
| C1202 | B | C | 5C |
| C1203 | B | C | 1A |
| C1204 | B | C | 1A |
| C1205 | B | C | 2A |
| C1206 | B | C | 3A |
| C1207 | B | C | 4A |
| C1208 | B | C | 4A |
| C1209 | B | C | 4A |
| C1210 | B | C | 6B |
| C1211 | A | D | 2E |
| C1212 | B | C | 2D |
| C1213 | B | C | 2D |
| C1214 | B | C | 2D |
| C1215 | A | D | 2D |
| C1216 | B | C | 3D |
| C1217 | B | C | 2C |
| C1218 | B | C | 2C |
| C1219 | B | C | 3C |
| C1220 | A | D | 3B |
| C1221 | B | C | 2B |
| C1222 | B | C | 2B |
| C1223 | B | C | 2B |
| C1224 | B | C | 3B |
| C1225 | B | C | 3B |
| C1226 | B | C | 2B |
| C1227 | B | C | 3C |
| C1228 | A | D | 3B |
| C1229 | B | C | 4C |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| C1230 | B | C | 4C |
| C1231 | B | C | 4C |
| C1232 | B | C | 4C |
| C1233 | A | D | 4C |
| C1234 | B | C | 4D |
| C1235 | A | D | 4D |
| C1236 | B | C | 4D |
| C1237 | B | C | 3D |
| C1238 | B | C | 4B |
| C1239 | B | C | 5B |
| C1240 | B | C | 5B |
| C1241 | B | C | 5B |
| C1242 | A | D | 5B |
| C1243 | B | C | 2A |
| C1244 | A | D | 3B |
| C1245 | B | C | 5B |
| C1246 | A | D | 5C |
| C1247 | B | C | 5C |
| C1248 | B | C | 4A |
| C1249 | B | C | 5B |
| C1250 | B | C | 5A |
| **CONNECTOR** | | | |
| CN1201 | A | D | 5A |
| **DIODE** | | | |
| D1201 | A | D | 5C |
| D1202 | A | D | 2A |
| D1203 | A | D | 3A |
| **IC** | | | |
| IC1201 | B | C | 3D |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| **COIL** | | | |
| L1201 | A | D | 5A |
| L1202 | A | D | 3E |
| L1203 | A | D | 4D |
| L1204 | A | D | 4B |
| L1205 | A | D | 2B |
| L1206 | A | D | 3B |
| L1207 | A | D | 4D |
| L1208 | A | D | 4B |
| L1209 | A | D | 5B |
| **TRANSISTOR** | | | |
| Q1201 | A | D | 5C |
| Q1202 | B | C | 2B |
| Q1203 | B | C | 3B |
| Q1204 | B | C | 4B |
| Q1205 | B | C | 3C |
| Q1206 | B | C | 4B |
| **RESISTOR** | | | |
| R1201 | B | C | 5C |
| R1202 | B | C | 5C |
| R1203 | B | C | 1A |
| R1204 | B | C | 1A |
| R1205 | B | C | 2A |
| R1206 | B | C | 5A |
| R1207 | B | C | 2D |
| R1208 | B | C | 2D |
| R1209 | B | C | 2D |
| R1210 | B | C | 3B |
| R1211 | B | C | 2C |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| R1212 | B | C | 2B |
| R1213 | B | C | 1B |
| R1214 | B | C | 2B |
| R1215 | B | C | 3B |
| R1216 | B | C | 2B |
| R1217 | B | C | 2B |
| R1218 | B | C | 3C |
| R1219 | B | C | 4C |
| R1220 | B | C | 4A |
| R1221 | B | C | 4B |
| R1222 | B | C | 4B |
| R1223 | B | C | 1B |
| R1224 | B | C | 4C |
| R1225 | B | C | 4A |
| R1226 | B | C | 4A |
| R1227 | B | C | 4B |
| R1228 | B | C | 4B |
| R1229 | B | C | 4B |
| R1230 | B | C | 2A |
| R1231 | B | C | 4B |
| R1232 | B | C | 3B |
| R1233 | B | C | 5A |
| VR1201 | A | D | 1E |
| **OTHER** | | | |
| LC1201 | A | D | 5B |

### <14>DEMODULATOR
### PB11076



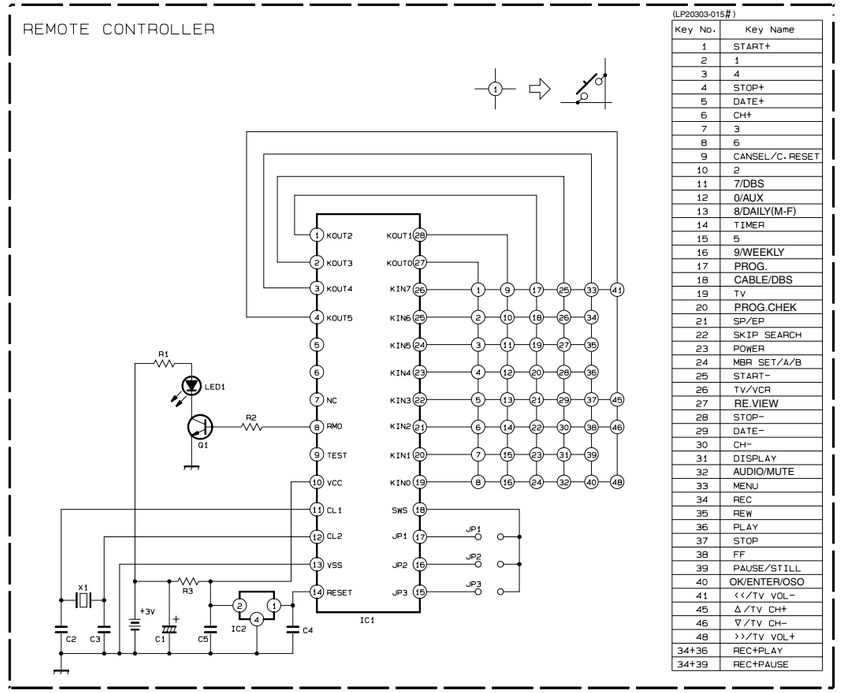

### COMPONENT PARTS LOCATION GUIDE
### <DEMODULATOR>

| REF.NO. | LOCATION | | |
|---|---|---|---|
| **CAPACITOR** | | | |
| C1501 | A | D | 4C |
| C1502 | A | D | 3D |
| C1503 | A | D | 4D |
| C1504 | A | D | 4C |
| C1505 | A | D | 3D |
| C1506 | A | D | 3C |
| C1507 | A | D | 2C |
| C1508 | A | D | 1D |
| C1509 | A | D | 2C |
| C1510 | A | D | 1B |
| C1511 | A | D | 1A |
| C1512 | A | D | 2A |
| C1513 | A | D | 2B |
| C1514 | A | D | 2A |
| C1515 | A | D | 3B |
| C1516 | A | D | 3C |
| C1517 | A | D | 3B |
| C1518 | A | D | 3A |
| C1519 | A | D | 3B |
| C1520 | A | D | 3A |
| C1521 | A | D | 2C |
| **CONNECTOR** | | | |
| CN1501 | A | D | 3A |

| REF.NO. | LOCATION | | |
|---|---|---|---|
| **IC** | | | |
| IC1501 | B | C | 2C |
| **TRANSISTOR** | | | |
| Q1501 | A | D | 3B |
| Q1502 | A | D | 3B |
| **RESISTOR** | | | |
| R1501 | A | D | 4C |
| R1502 | A | D | 2C |
| R1503 | A | D | 2C |
| R1504 | A | D | 2B |
| R1505 | A | D | 2B |
| R1506 | A | D | 2B |
| R1507 | A | D | 2B |
| R1508 | A | D | 3B |
| R1509 | A | D | 3B |
| R1510 | A | D | 4B |
| R1511 | A | D | 3A |
| R1514 | A | D | 2B |
| R1515 | A | D | 2C |
| R1517 | A | D | 2C |

## 4.14 REMOTE CONTROLLER SCHEMATIC DIAGRAM

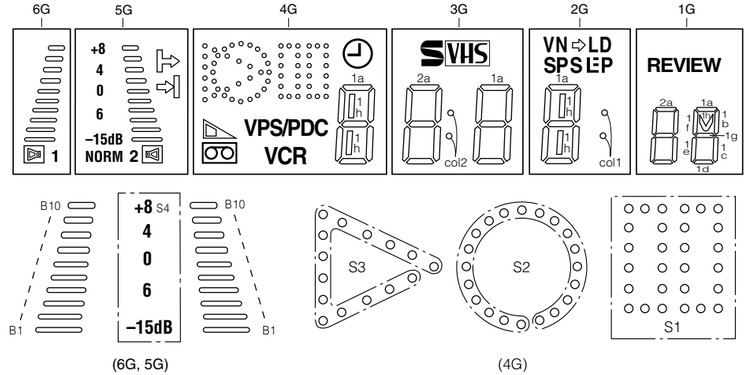
NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



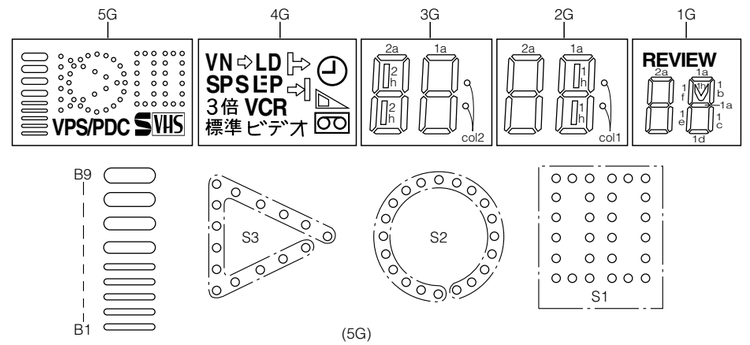

| Key No. | Key Name |
|---|---|
| 1 | START+ |
| 2 | 1 |
| 3 | 4 |
| 4 | STOP+ |
| 5 | DATE+ |
| 6 | CH+ |
| 7 | 3 |
| 8 | 6 |
| 9 | CANSEL/C.RESET |
| 10 | 2 |
| 11 | 7/DBS |
| 12 | 0/AUX |
| 13 | 8/DAILY(M-F) |
| 14 | TIMER |
| 15 | 5 |
| 16 | 9/WEEKLY |
| 17 | PROG. |
| 18 | CABLE/DBS |
| 19 | TV |
| 20 | PROG.CHEK |
| 21 | SP/EP |
| 22 | SKIP SEARCH |
| 23 | POWER |
| 24 | MBR SET/A/B |
| 25 | START− |
| 26 | TV/VCR |
| 27 | RE.VIEW |
| 28 | STOP− |
| 29 | DATE− |
| 30 | CH− |
| 31 | DISPLAY |
| 32 | AUDIO/MUTE |
| 33 | MENU |
| 34 | REC |
| 35 | REW |
| 36 | PLAY |
| 37 | STOP |
| 38 | FF |
| 39 | PAUSE/STILL |
| 40 | OK/ENTER/OSO |
| 41 | ‹‹/TV VOL− |
| 45 | Δ/TV CH+ |
| 46 | ∇/TV CH− |
| 48 | ››/TV VOL+ |
| 34+36 | REC+PLAY |
| 34+39 | REC+PAUSE |

## 4.15 FDP GRID ASSIGNMENT AND ANODE CONNECTION

### [A] (FDP with audio level indicator)




### [B] (FDP without audio level indicator)




### ANODE CONNECTION [A]

| | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|
| P 1 | — | ⇨ | S2 | 1a | 1a | 1a |
| P 2 | — | ⇨\| | S1 | 1b | 1b | 1b |
| P 3 | — | S4 | S3 | 1f | 1f | 1f |
| P 4 | — | NORM | VPS/PDC | 1g | 1g | 1g |
| P 5 | 1 | 2 | 🕘 | 1c | 1c | 1c |
| P 6 | ▷ | ◁ | ◺ | 1e | 1e | 1e |
| P 7 | B10 | B10 | 📼 | 1d | 1d | 1d |
| P 8 | B9 | B9 | VCR | col2 | 1h | 1h |
| P 9 | B8 | B8 | 1a | 2a | col1 | 2a |
| P10 | B7 | B7 | 1b | 2b | ⇨ | 2b |
| P11 | B6 | B6 | 1f | 2f | VN | 2f |
| P12 | B5 | B5 | 1g | 2g | LD | 2g |
| P13 | B4 | B4 | 1c | 2c | SP | 2c |
| P14 | B3 | B3 | 1e | 2e | S (SEP) | 2e |
| P15 | B2 | B2 | 1d | 2d | : (SEP) | 2d |
| P16 | B1 | B1 | 1h | S-VHS | LP (SEP) | REVIEW |

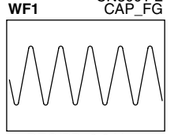
### ANODE CONNECTION [B]

| | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|
| P 1 | S2 | ⇨ | 1a | 1a | 1a |
| P 2 | S1 | ⇨\| | 1b | 1b | 1b |
| P 3 | S3 | 3倍 | 1f | 1f | 1f |
| P 4 | VPS/PDC | 標準 | 1g | 1g | 1g |
| P 5 | S-VHS | 🕘 | 1c | 1c | 1c |
| P 6 | — | ◺ | 1e | 1e | 1e |
| P 7 | — | 📼 | 1d | 1d | 1d |
| P 8 | B9 | VCR | col2 | 1h | 1h |
| P 9 | B8 | ビデオ | 2a | 2a | 2a |
| P10 | B7 | ⇨ | 2b | 2b | 2b |
| P11 | B6 | VN | 2f | 2f | 2f |
| P12 | B5 | LD | 2g | 2g | 2g |
| P13 | B4 | SP | 2c | 2c | 2c |
| P14 | B3 | S (SEP) | 2e | 2e | 2e |
| P15 | B2 | : (SEP) | 2d | 2d | 2d |
| P16 | B1 | LP (SEP) | 2h | col1 | REVIEW |

## 4.16 WAVEFORMS

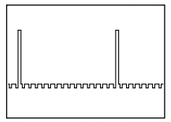
### < SYSCON >

**WF1** CN3001-2 CAP_FG



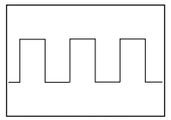
REC/PB 2.9 Vp-p
50 mV/0.5 msec/DIV

**WF2** CN3002-4 D.PG



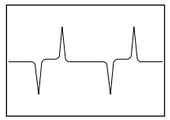
REC/PB 4.5 Vp-p
0.1 V/10 msec/DIV

**WF3** CN3002-5 D.FG



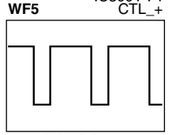
REC/PB 4.2 Vp-p
0.1 V/1 msec/DIV

**WF4** TP4001 CTL.P



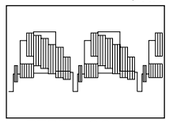
PB 3.0 Vp-p
0.1 V/10 msec/DIV

**WF5** IC3001-74 CTL_+



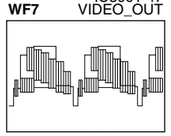
REC 3.6 Vp-p
1.0 V/10 msec/DIV

**WF6** IC3001-49 CVIN



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

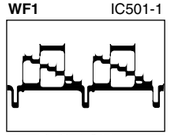
**WF7** IC3001-47 VIDEO_OUT



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

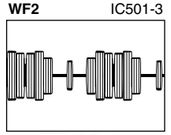
### < S-SUB >

**WF1** IC501-1



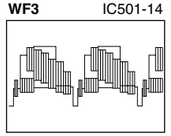
REC 1.0 Vp-p
20 mV/20 µsec/DIV

**WF2** IC501-3



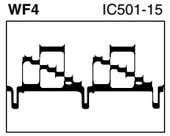
REC 0.7 Vp-p
20 mV/20 µsec/DIV

**WF3** IC501-14



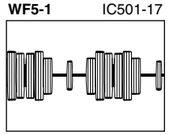
REC 1.2 Vp-p
50 mV/20 µsec/DIV

**WF4** IC501-15



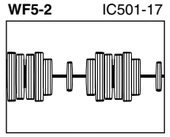
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

**WF5-1** IC501-17



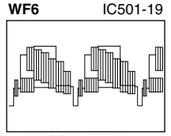
REC 1.4 Vp-p
50 mV/20 µsec/DIV

**WF5-2** IC501-17



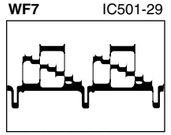
PB 1.2 Vp-p
50 mV/20 µsec/DIV

**WF6** IC501-19



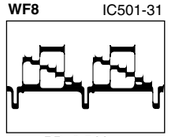
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

**WF7** IC501-29



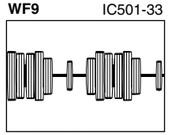
REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

**WF8** IC501-31



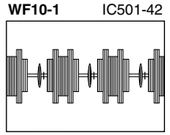
PB 0.5 Vp-p
20 mV/20 µsec/DIV

**WF9** IC501-33



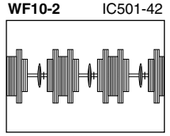
REC 0.68 Vp-p
20 mV/20 µsec/DIV

**WF10-1** IC501-42



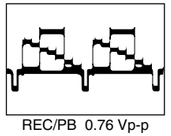
REC 0.57 Vp-p
20 mV/20 µsec/DIV

**WF10-2** IC501-42



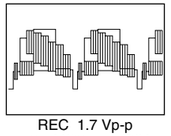
PB 0.64 Vp-p
20 mV/20 µsec/DIV

**WF11** IC501-43



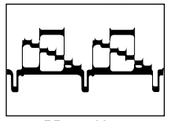
REC/PB 0.76 Vp-p
20 mV/20 µsec/DIV

**WF12-1** IC501-45



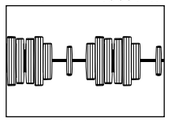
REC 1.7 Vp-p
50 mV/20 µsec/DIV

**WF12-2** IC501-45



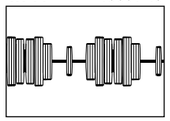
PB 1.7 Vp-p
50 mV/20 µsec/DIV

**WF13** IC501-47



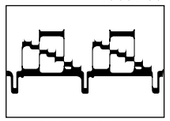
PB 1.0 Vp-p
50 mV/20 µsec/DIV

**WF14** IC501-48



PB 0.7 Vp-p
20 mV/20 µsec/DIV

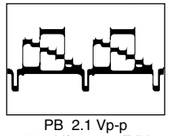
**WF15** IC501-56



PB 2.1 Vp-p
50 mV/20 µsec/DIV

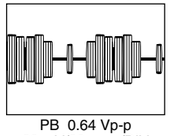
### < VIDEO >

**WF1** IC1-27



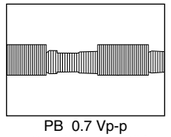
PB 2.1 Vp-p
50 mV/20 µsec/DIV

**WF2** IC1-30



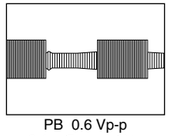
PB 0.64 Vp-p
20 mV/20 µsec/DIV

**WF3** IC1-1



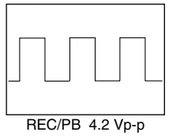
PB 0.7 Vp-p
50 mV/5 msec/DIV

**WF4** TP106 PB.FM



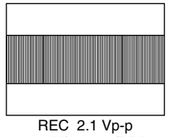
PB 0.6 Vp-p
0.1 V/5 msec/DIV

**WF5** TP111 D.FF



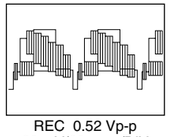
REC/PB 4.2 Vp-p
0.5 V/10 msec/DIV

**WF6** IC1-105



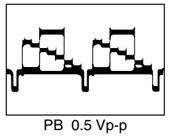
REC 2.1 Vp-p
0.1 V/1 msec/DIV

**WF7-1** IC1-14



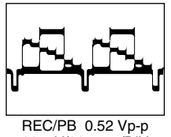
REC 0.52 Vp-p
20 mV/20 µsec/DIV

**WF7-2** IC1-14



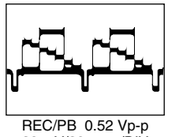
PB 0.5 Vp-p
20 mV/20 µsec/DIV

**WF8** IC1-13



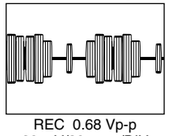
REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

**WF9** IC1-11



REC/PB 0.52 Vp-p
20 mV/20 µsec/DIV

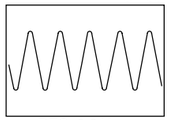
**WF10** IC1-16



REC 0.68 Vp-p
20 mV/20 µsec/DIV

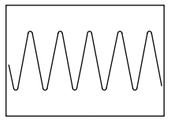
### < AUDIO >

**WF1** IC1-80



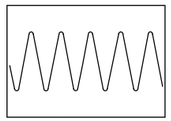
REC 0.2 Vp-p
5 mV/0.5 msec/DIV

**WF2** IC1-62



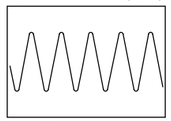
REC/PB 0.9 Vp-p
20 mV/0.5 msec/DIV

**WF3** IC1-52



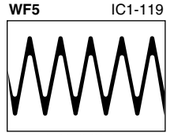
REC 0.11 Vp-p
2 mV/0.5 msec/DIV

**WF4** IC1-48



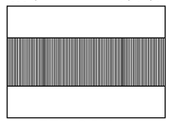
PB 0.72 Vp-p
20 mV/0.5 msec/DIV

**WF5** IC1-119



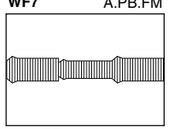
REC 0.8 Vp-p
20 mV/0.5 msec/DIV

**WF6** IC1-97



REC 2.5 Vp-p
0.1 V/5 msec/DIV

**WF7** TP2253 A.PB.FM



PB 0.8 Vp-p
50 mV/5 msec/DIV

## 4.17 VOLTAGE CHARTS

<MAIN>

| MODE PIN NO. | REC | PLAY |
|---|---|---|
| IC1 | | |
| 1 | 1.6 | 2.1 |
| 2 | 2.8 | 2.8 |
| 3 | 2.6 | 2.6 |
| 4 | 1.9 | 1.5 |
| 5 | 1.9 | 1.5 |
| 6 | 2.4 | 2.1 |
| 7 | 1.5 | 0.8 |
| 8 | 0 | 0 |
| 9 | 2.7 | 3.1 |
| 10 | 2.4 | 2.4 |
| 11 | 3.1 | 3.1 |
| 12 | 2.8 | 2.4 |
| 13 | 3.1 | 3.1 |
| 14 | 3.6 | 2.4 |
| 15 | 0 | 0 |
| 16 | 2.8 | 2.8 |
| 17 | 1.5 | 1.5 |
| 18 | 2.8 | 2.8 |
| 19 | 0.9 | 1.1 |
| 20 | 2.8 | 2.8 |
| 21 | 1.5 | 1.9 |
| 22 | 2.8 | 2.8 |
| 23 | 3.1 | 2.9 |
| 24 | 5.0 | 5.0 |
| 25 | 0.4 | 0.4 |
| 26 | 0 | 0 |
| 27 | 1.3 | 2.3 |
| 28 | 2.8 | 2.4 |
| 29 | 1.9 | 1.9 |
| 30 | 2.1 | 2.1 |
| 31 | 0 | 0 |
| 32 | 2.4 | 2.4 |
| 33 | 5.0 | 5.0 |
| 34 | 2.7 | 2.4 |
| 35 | 5.0 | 5.0 |
| 36 | 2.4 | 2.4 |
| 37 | 2.3 | 2.8 |
| 38 | 0.2 | 0.3 |
| 39 | 1.3 | 1.2 |
| 40 | 1.7 | 1.7 |
| 41 | 2.7 | 2.7 |
| 42 | 2.2 | 2.2 |
| 43 | 0 | 0 |
| 44 | 2.1 | 2.1 |
| 45 | 3.4 | 3.4 |
| 46 | 3.8 | 3.8 |
| 47 | 2.9 | 2.9 |
| 48 | 2.6 | 2.6 |
| 49 | 5.0 | 5.0 |
| 50 | 2.5 | 2.5 |
| 51 | 2.8 | 2.8 |
| 52 | 2.3 | 2.3 |
| 53 | 2.3 | 2.3 |
| 54 | 2.4 | 2.4 |
| 55 | 2.2 | 2.2 |
| 56 | 0.5 | 0.5 |
| 57 | 2.3 | 2.3 |
| 58 | 8.8 | 8.8 |
| 59 | 4.5 | 4.5 |
| 60 | 4.5 | 4.5 |
| 61 | 4.6 | 4.5 |
| 62 | 4.5 | 4.4 |
| 63 | 2.3 | 2.3 |
| 64 | 2.3 | 2.3 |
| 65 | 0.7 | 0.7 |
| 66 | 0.7 | 0.7 |
| 67 | 3.3 | 3.3 |
| 68 | 3.3 | 3.3 |
| 69 | 2.3 | 2.3 |
| 70 | 0 | 0 |
| 71 | 0.2 | 0.2 |
| 72 | 0.2 | 0.2 |
| 73 | 0.2 | 0.2 |
| 74 | 2.3 | 2.3 |
| 75 | 2.7 | 2.7 |
| 76 | 0 | 0 |
| 77 | 2.7 | 2.7 |
| 78 | 0.2 | 0.2 |
| 79 | 0.2 | 0.2 |
| 80 | 0.2 | 0.2 |
| 81 | 2.3 | 2.3 |
| 82 | 0.7 | 0.8 |
| 83 | 0 | 0 |
| 84 | 2.3 | 2.3 |
| 85 | 2.3 | 2.3 |
| 86 | 2.3 | 2.3 |
| 87 | 1.7 | 1.8 |
| 88 | 2.3 | 2.3 |
| 89 | 2.3 | 2.3 |
| 90 | 2.3 | 2.3 |
| 91 | 0.1 | 0.1 |
| 92 | 0 | 0 |
| 93 | 0 | 2.4 |
| 94 | 0 | 2.0 |
| 95 | 0 | 0 |
| 96 | 2.5 | 2.3 |
| 97 | 2.7 | 2.3 |
| 98 | 2.6 | 2.3 |
| 99 | 5.0 | 5.0 |
| 100 | 5.0 | 5.0 |
| 101 | 0 | 0 |
| 102 | 0 | 0 |
| 103 | 0 | 0 |
| 104 | 2.3 | 2.3 |
| 105 | 2.5 | 2.3 |
| 106 | 2.3 | 2.3 |
| 107 | 5.0 | 5.0 |
| 108 | 0 | 0 |
| 109 | 0 | 0 |
| 110 | 0 | 0 |
| 111 | 0 | 2.7 |
| 112 | 2.5 | 2.5 |
| 113 | 0.5 | 0.5 |
| 114 | 0 | 0 |
| 115 | 2.6 | 2.6 |
| 116 | 2.5 | 2.5 |
| 117 | 2.5 | 2.5 |
| 118 | 0 | 0 |
| 119 | 2.5 | 2.5 |
| 120 | 0 | 0 |
| IC501 | | |
| 1 | 2.8 | 2.8 |
| 2 | 0 | 0 |
| 3 | 2.1 | 2.1 |
| 4 | 4.9 | 4.9 |
| 5 | 2.8 | 2.8 |
| 6 | 0 | 0 |
| 7 | 2.8 | 2.8 |
| 8 | 0.1 | 0 |
| 9 | 2.8 | 2.8 |
| 10 | 0 | 0 |
| 11 | 2.1 | 2.1 |
| 12 | 2.8 | 2.8 |
| 13 | 0 | 0 |
| 14 | 2.8 | 2.8 |
| 15 | 2.3 | 2.3 |
| 16 | 2.7 | 2.7 |
| 17 | 2.4 | 2.4 |
| 18 | 0 | 0 |
| 19 | 2.3 | 2.3 |
| 20 | 0 | 0 |
| 21 | 3.5 | 3.5 |
| 22 | 2.7 | 2.7 |
| 23 | 2.9 | 2.1 |
| 24 | 2.8 | 2.8 |
| 25 | 2.8 | 2.8 |
| 26 | 4.9 | 4.9 |
| 27 | 3.0 | 3.0 |
| 28 | 2.4 | 2.3 |
| 29 | 2.5 | 2.3 |
| 30 | 4.9 | 4.9 |
| 31 | 2.7 | 3.0 |
| 32 | 0.1 | 4.9 |
| 33 | 2.8 | 2.8 |
| 34 | 2.8 | 2.8 |
| 35 | 2.8 | 2.8 |
| 36 | 2.8 | 2.8 |
| 37 | 0 | 0 |
| 38 | 3.7 | 3.7 |
| 39 | 3.3 | 3.3 |
| 40 | 2.8 | 2.8 |
| 41 | 2.6 | 2.6 |
| 42 | 2.8 | 2.8 |
| 43 | 3.3 | 3.3 |
| 44 | 2.0 | 1.9 |
| 45 | 2.0 | 2.0 |
| 46 | 4.9 | 4.9 |
| 47 | 0.5 | 2.4 |
| 48 | 2.8 | 2.8 |
| 49 | 0 | 0 |
| 50 | 2.8 | 2.8 |
| 51 | 2.9 | 2.9 |
| 52 | 2.4 | 2.4 |
| 53 | 3.1 | 3.1 |
| 54 | 2.3 | 2.4 |
| 55 | 1.9 | 1.1 |
| 56 | 2.5 | 3.4 |
| IC502 | | |
| 1 | 2.0 | 2.0 |
| 2 | 1.4 | 4.9 |
| 3 | 3.3 | 3.3 |
| 4 | 3.4 | 3.4 |
| 5 | 4.9 | 4.9 |
| 6 | 2.2 | 2.2 |
| 7 | 2.0 | 2.0 |
| 8 | 4.9 | 4.9 |
| 9 | 1.5 | 1.5 |
| 10 | 2.9 | 2.8 |
| 11 | 2.9 | 2.8 |
| 12 | 2.9 | 2.8 |
| 13 | 0 | 0 |
| 14 | 2.8 | 2.8 |
| 15 | 2.8 | 2.8 |
| 16 | 1.9 | 2.0 |
| 17 | 1.9 | 2.0 |
| 18 | 1.9 | 2.0 |
| IC3001 | | |
| 1 | - | - |
| 2 | - | - |
| 3 | 0.6 | 0.6 |
| 4 | 4.8 | 0 |
| 5 | 4.8 | 4.8 |
| 6 | 0 | 0 |
| 7 | 0 | 0 |
| 8 | 4.8 | 0 |
| 9 | 0 | 0 |
| 10 | 4.8 | 4.8 |
| 11 | 0 | 0 |
| 12 | 0 | 0 |
| 13 | 4.8 | 4.8 |
| 14 | 0 | 0 |
| 15 | 0 | 4.8 |
| 16 | 4.8 | 4.8 |
| 17 | 3.7 | 3.7 |
| 18 | 3.2 | 3.2 |
| 19 | 4.8 | 0 |
| 20 | 4.8 | 0 |
| 21 | 0.9 | 1.1 |
| 22 | 4.3 | 4.3 |
| 23 | 2.4 | 2.4 |
| 24 | 0 | 0 |
| 25 | - | - |
| 26 | 0 | 2.4 |
| 27 | 4.8 | 0 |
| 28 | 4.8 | 4.8 |
| 29 | 0 | 0 |
| 30 | 4.8 | 4.8 |
| 31 | 4.8 | 4.8 |
| 32 | 0 | 0 |
| 33 | 2.5 | 2.5 |
| 34 | 1.4 | 1.4 |
| 35 | 0 | 0 |
| 36 | 4.8 | 4.8 |
| 37 | - | - |
| 38 | - | - |
| 39 | 2.4 | 0 |
| 40 | - | - |
| 41 | - | - |
| 42 | 0 | 0 |
| 43 | 4.8 | 4.8 |
| 44 | 0 | 0 |
| 45 | 4.8 | 4.8 |
| 46 | 4.4 | 4.4 |
| 47 | 2.3 | 2.3 |
| 48 | 0 | 0 |
| 49 | 2.3 | 2.3 |
| 50 | 2.5 | 2.5 |
| 51 | 5.0 | 5.0 |
| 52 | 2.5 | 2.5 |
| 53 | 2.5 | 2.5 |
| 54 | 0 | 0 |
| 55 | 0 | 0 |
| 56 | 4.5 | 4.5 |
| 57 | 4.5 | 4.5 |
| 58 | 0 | 0 |
| 59 | 4.8 | 4.8 |
| 60 | 0 | 0 |
| 61 | 0 | 0 |
| 62 | 4.9 | 4.9 |
| 63 | 4.9 | 4.9 |
| 64 | 4.9 | 4.9 |
| 65 | 2.6 | 2.6 |
| 66 | 0.4 | 0.4 |
| 67 | 2.4 | 2.4 |
| 68 | 2.4 | 2.4 |
| 69 | 2.4 | 2.4 |
| 70 | 2.4 | 2.4 |
| 71 | 0 | 0 |
| 72 | 2.4 | 2.4 |
| 73 | 4.9 | 4.9 |
| 74 | 2.9 | 2.9 |
| 75 | 1.9 | 2.4 |
| 76 | 2.4 | 2.4 |
| 77 | 0 | 0 |
| 78 | 0 | 0 |
| 79 | 0 | 0 |
| 80 | 1.1 | 1.1 |
| 81 | 0 | 0 |
| 82 | 0 | 2.7 |
| 83 | 0 | 2.0 |
| 84 | 4.9 | 4.9 |
| 85 | 0 | 0 |
| 86 | 0 | 0 |
| 87 | - | - |
| 88 | 0 | 0 |
| 89 | 0 | 0 |
| 90 | 4.9 | 4.9 |
| 91 | 0 | 0 |
| 92 | 0 | 0 |
| 93 | 0 | 0 |
| 94 | 4.9 | 4.9 |
| 95 | 3.8 | 3.8 |
| 96 | 4.5 | 4.5 |
| 97 | 0.4 | 0.4 |
| 98 | 0.1 | 0.1 |
| 99 | 0 | 0 |
| 100 | 4.9 | 4.9 |
| IC3002 | | |
| 1 | 7.3 | 7.3 |
| 2 | 0.1 | 0.1 |
| 3 | 0 | 0 |
| 4 | 0.1 | 0.1 |
| 5 | 11.6 | 11.6 |
| 6 | 11.6 | 11.6 |
| 7 | 0 | 0 |
| 8 | 0 | 0 |
| 9 | 0 | 0 |
| IC3003 | | |
| 1 | 4.9 | 4.9 |
| 2 | 4.9 | 4.9 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| IC3004 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| IC5301 | | |
| 1 | 2.4 | 2.4 |
| 2 | 0 | 0 |
| 3 | 4.4 | 4.4 |
| IC7001 | | |
| 1 | 4.9 | 4.9 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0.7 | 0.7 |
| 6 | 0.7 | 0.7 |
| 7 | 0 | 0 |
| 8 | 4.5 | 4.5 |
| 9 | 4.5 | 4.5 |
| 10 | 0 | 0 |
| 11 | 0 | 0 |
| 12 | 0 | 0 |
| 13 | 0 | 0 |
| 14 | 4.9 | 4.9 |
| 15 | - | - |
| 16 | - | - |
| 17 | - | - |
| 18 | - | - |
| 19 | - | - |
| 20 | - | - |
| 21 | - | - |
| 22 | - | - |
| 23 | - | - |
| 24 | - | - |
| 25 | - | - |
| 26 | - | - |
| 27 | -27.4 | -27.4 |
| 28 | - | - |
| 29 | - | - |
| 30 | - | - |
| 31 | - | - |
| 32 | - | - |
| 33 | - | - |
| 34 | - | - |
| 35 | - | - |
| 36 | - | - |
| 37 | - | - |
| 38 | 4.9 | 4.9 |
| 39 | 4.9 | 4.9 |
| 40 | 4.9 | 4.9 |
| 41 | 4.9 | 4.9 |
| 42 | 4.9 | 4.9 |
| 43 | 0 | 0 |
| 44 | 2.6 | 2.6 |
| IC7003 | | |
| 1 | 4.9 | 4.9 |
| 2 | 4.9 | 4.9 |
| 3 | 0 | 0 |
| CN1 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 2.4 | 2.4 |
| 6 | 2.4 | 2.4 |
| 7 | 2.4 | 2.4 |
| 8 | 2.4 | 2.4 |
| 9 | 2.7 | 2.4 |
| 10 | 2.7 | 2.4 |
| 11 | 2.7 | 2.4 |
| 12 | 0 | 0 |
| 13 | 0 | 0 |
| CN501 | | |
| 1 | 3.7 | 3.7 |
| 2 | 0 | 0 |
| 3 | 0.5 | 2.4 |
| 4 | 5.0 | 5.0 |
| 5 | 2.0 | 2.0 |
| 6 | 2.4 | 2.4 |
| 7 | 2.4 | 2.4 |
| 8 | 2.4 | 2.4 |
| 9 | 2.7 | 2.4 |
| 10 | 2.7 | 2.4 |
| 11 | 2.7 | 2.4 |
| 12 | 0 | 0 |
| 13 | 0 | 0 |
| 14 | 4.9 | 4.9 |
| 15 | 2.4 | 2.4 |
| 16 | 2.4 | 2.4 |
| 17 | 0 | 0 |
| CN6701 | | |
| 1 | 0 | 0 |
| 2 | 4.5 | 4.5 |
| 3 | 4.5 | 4.5 |
| 4 | 4.8 | 4.8 |
| 5 | 0 | 0 |
| 6 | 0 | 0 |
| 7 | 8.9 | 8.9 |
| 8 | 0 | 0 |
| 9 | 2.3 | 2.3 |
| CN7001 | | |
| 1 | 4.9 | 4.9 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
| 6 | 0 | 0 |
| 7 | 0 | 0 |
| 8 | 0 | 0 |
| 9 | 3.0 | 3.0 |
| CN7103 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| FW3001 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| FW3002 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 15 | 2.4 | 2.4 |
| 16 | 0 | 0 |
| 17 | 0 | 0 |
| CN2001 | | |
| 1 | 0.1 | 0.1 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
| 6 | 2.3 | 2.3 |
| 7 | 2.6 | 2.3 |
| CN2002 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| CN3001 | | |
| 1 | 0 | 0 |
| 2 | 2.5 | 2.5 |
| 3 | 2.5 | 2.5 |
| 4 | 5.0 | 5.0 |
| 5 | 0 | 0 |
| 6 | 4.9 | 4.9 |
| 7 | - | - |
| 8 | 11.6 | 11.6 |
| CN3002 | | |
| 1 | 11.6 | 11.6 |
| 2 | 0 | 0 |
| 3 | 1.3 | 1.3 |
| 4 | 0.3 | 0.3 |
| 5 | 2.6 | 2.6 |
| CN3003 | | |
| 1 | 0.2 | 0.2 |
| 2 | 0.3 | 0.3 |
| CN3004 | | |
| 1 | 4.9 | 4.9 |
| 2 | 4.9 | 4.9 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
| 6 | 0 | 0 |
| 7 | 0 | 0 |
| 8 | 0 | 0 |
| 9 | 0 | 0 |
| CN6701 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| FW7105 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |

<S-JACK> [HR-S5900U/U(C)]

| MODE PIN NO. | REC | PLAY |
|---|---|---|
| CN7108 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |

<ADV.JOG>

| MODE PIN NO. | REC | PLAY |
|---|---|---|
| CN7004 | | |
| 1 | 4.9 | 4.9 |
| 2 | 4.9 | 4.9 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
| 6 | 0 | 0 |
| 7 | 0 | 0 |
| 8 | 0 | 0 |
| 9 | 0 | 0 |

<R.PAUSE>

| MODE PIN NO. | REC | PLAY |
|---|---|---|
| FW7104 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |

<C.BOX CTL>

| MODE PIN NO. | REC | PLAY |
|---|---|---|
| FW7105 | | |
| 1 | 0 | 0 |
| 2 | 0 | 0 |

<2D DIGITAL>

| MODE PIN NO. | REC | PLAY |
|---|---|---|
| IC1201 | - | - |
| CN1201 | | |
| 1 | 3.7 | 3.7 |
| 2 | 0 | 0 |
| 3 | 0.5 | 2.4 |
| 4 | 5.0 | 5.0 |
| 5 | 2.0 | 2.0 |
| 6 | 0.1 | 4.9 |
| 7 | 3.3 | 3.3 |
| 8 | 0 | 0 |
| 9 | 2.8 | 2.8 |
| 10 | 0 | 0 |
| 11 | 3.3 | 3.3 |
| 12 | 3.8 | 3.8 |
| 13 | 0 | 0 |
| 14 | 0 | 0 |
| 15 | 2.4 | 2.4 |
| 16 | 0 | 0 |
| 17 | 0 | 0 |

<DEMODULATOR>

| MODE PIN NO. | REC | PLAY |
|---|---|---|
| IC1501 | - | - |
| CN1501 | | |
| 1 | 0 | 0 |
| 2 | 4.5 | 4.5 |
| 3 | 4.5 | 4.5 |
| 4 | 4.8 | 4.8 |

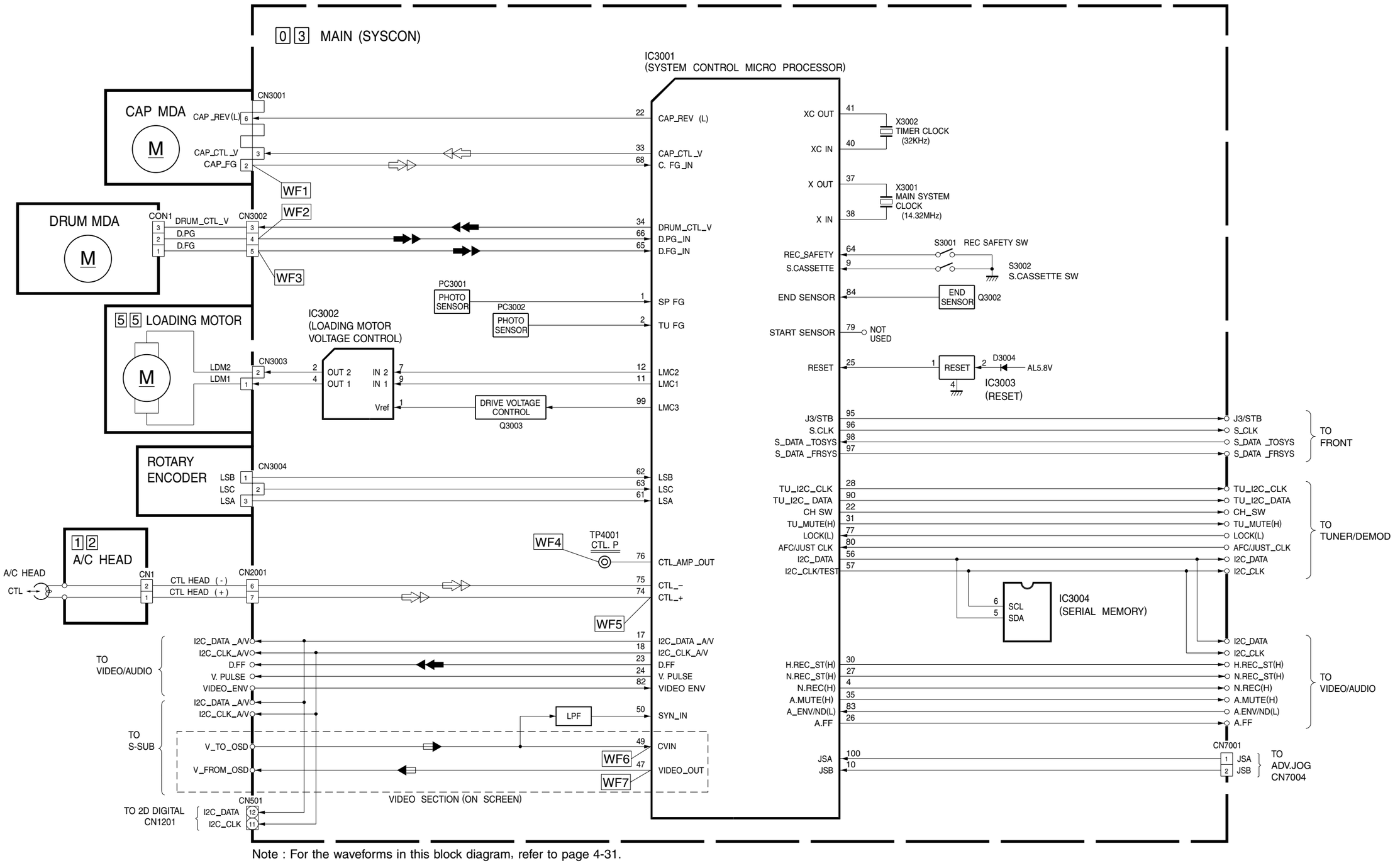


## 4.18 CPU PIN FUNCTION

### <SYSCON IC3001>

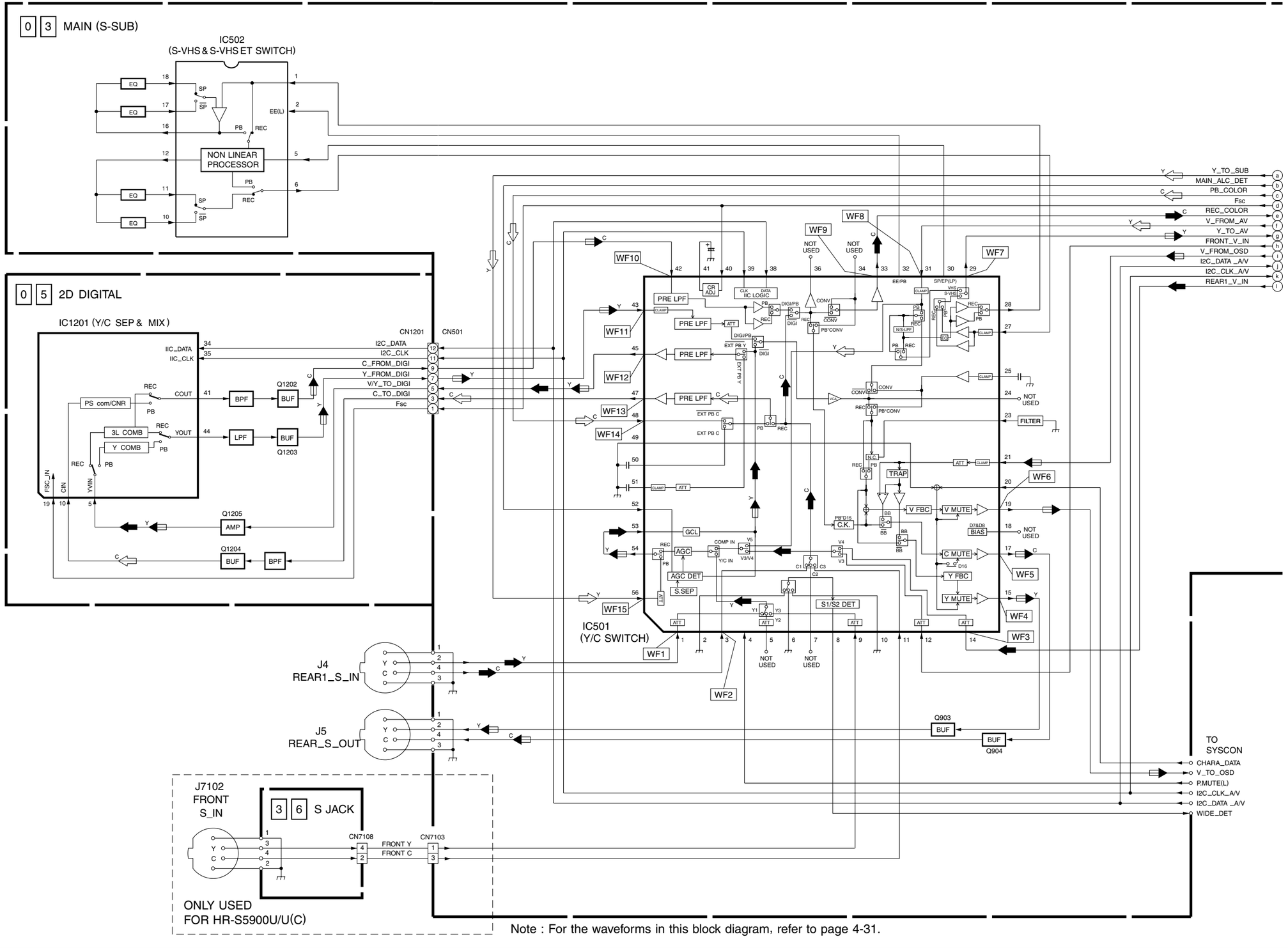
| PIN No. | LABEL | IN/OUT | FUNCTION |
|---|---|---|---|
| 1 | SP FG | IN | DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN |
| 2 | TU FG | IN | DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN |
| 3 | R.PAUSE IN/AV COMPULINK IN | IN | REMOTE PAUSE INPUT/NC |
| 4 | N.REC(H) | OUT | NORMAL AUDIO REC MODE CONTROL (REC: H) |
| 5 | RC IN | IN | REMOTE CONTROL DATA INPUT |
| 6 | TRICK[H]/M_TRICK[L] | - | NC |
| 7 | ET_PB[H]/HS_FR | - | NC |
| 8 | FULL.E.ON[H]/SEP_PB[H] | OUT | FULL ERASE HEAD ON: H/NC |
| 9 | S.CASSETTE | IN | DETECTION SIGNAL FOR SVHS CASSETTE (SVHS: H) |
| 10 | JSB | IN | INPUT FOR THE JOG SHUTTLE |
| 11 | LMC1 | OUT | LOADING MOTOR DRIVE (1) |
| 12 | LMC2 | OUT | LOADING MOTOR DRIVE (2) |
| 13 | RMO/R-Y_REV/BS_ANT_ON[H] | OUT | REMOTE CONTROLLER OUTPUT FOR CABLE BOX/NC/NC |
| 14 | POWER DET | IN | DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY |
| 15 | CONV_CTL(H)/GR_ON[H] | OUT | RF CONVERTER ON/OFF (ON: H, OFF: L) /NC |
| 16 | CTL GAIN | OUT | CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING |
| 17 | I2C_DATA_A/V | IN/OUT | SERIAL I/O DATA |
| 18 | I2C_CLK_A/V | OUT | SERIAL DATA TRANSFER CLOCK |
| 19 | SP_SHORT(H)/FLY_REC_ST[H] | OUT | MODE SELECT [HR-S3900U/U(C)] / FLY REC START: H [HR-S5900U/U(C) |
| 20 | EP_SHORT(H)/FLY_REC(H) | OUT | MODE SELECT [HR-S3900U/U(C)] / REC TIMING CONTROL (FLY ERASE ON: H) [HR-S5900U/U(C) |
| 21 | SIDE BIND GAIN | OUT | VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE |
| 22 | CH SW | OUT | CHANNEL SWITCHING SIGNAL |
| 23 | D.FF | OUT | ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC |
| 24 | V.PULSE | OUT | V.PULSE ADDITION TIMING CONTROL |
| 25 | RESET | - | RESET TERMINAL (RESET ON: L) |
| 26 | A.FF | OUT | AUDIO FF OUTPUT |
| 27 | N.REC_ST(H) | OUT | NORMAL AUDIO SOUND RECORDING START |
| 28 | TU_I2C_CLK | OUT | SERIAL DATA TRANSFER CLOCK FOR TUNER |
| 29 | SLOW_PULSE | - | NC |
| 30 | H.REC_ST(H) | OUT | HiFi AUDIO SOUND RECORDING START |
| 31 | TU_MUTE(H) | OUT | TUNER AUDIO MUTE CONTROL (MUTE: H) |
| 32 | VP_CTL | - | NC |
| 33 | CAP_CTL_V | OUT | CAPSTAN MOTOR CONTROL |
| 34 | DRUM_CTL_V | OUT | DRUM MOTOR CONTROL |
| 35 | A.MUTE(H) | OUT | AUDIO MUTE CONTROL (MUTE ON: H) |
| 36 | VDD | - | SYSTEM POWER |
| 37 | X OUT | - | MAIN SYSTEM CLOCK (14.32MHz) |
| 38 | X IN | - | MAIN SYSTEM CLOCK (14.32MHz) |
| 39 | VSS | - | GND |
| 40 | XC IN | - | TIMER CLOCK (32.768kHz) |
| 41 | XC OUT | - | TIMER CLOCK (32.768kHz) |
| 42 | CLK SEL | IN | SELECT FOR BACKUP METHOD (LITHIUM OR E.CAPACITOR): H |
| 43 | P.MUTE(L) | OUT | PICTURE MUTE CONTROL (MUTE: L) |
| 44 | 3.58NTSC[L]/P.SAVE[L] | - | NC / NC |
| 45 | V.REF/SYNC_DET[H] | - | NC / NC |
| 46 | PROTECT | IN | DETECTION SIGNAL FOR SWITCHING POWER SUPPLY |
| 47 | VIDEO_OUT | OUT | COMPOSITE VIDEO SIGNAL OUTPUT |
| 48 | VSS2 | - | GND |
| 49 | CVIN | IN | COMPOSITE VIDEO SIGNAL INPUT |
| 50 | SYN_IN | IN | COMPOSITE SYNCHRONIZING SIGNAL FOR SERVO, VERTICAL SYNCHRONIZING SIGNAL FOR OSD |
| 51 | VDD2 | - | SYSTEM POWER |
| 52 | AFCC | IN | FILTER INPUT FOR HORIZONTAL SYNCHRONIZING OF OSD CHARACTER |
| 53 | AFCLPF | OUT | FILTER OUTPUT FOR HORIZONTAL SYNCHRONIZING OF OSD CHARACTER |
| 54 | FSCI/BIT_IN(H) | - | NC |
| 55 | FSCLPF/BS_P.CTL | - | NC |
| 56 | I2C_DATA | IN/OUT | SERIAL I/O DATA |
| 57 | I2C_CLK/TEST | OUT | SERIAL DATA TRANSFER CLOCK / MECHANISM TEST SIGNAL |
| 58 | CHARAE | OUT | OSD CHARACTER DATA (FRINGE) OUTPUT |
| 59 | P.CTL[H] | OUT | CONTROL SIGNAL FOR SWITCHING POWER SUPPLY |
| 60 | CHARAM | OUT | OSD CHARACTER DATA OUTPUT |
| 61 | LSA | IN | MECHANISM MODE DETECT (A) |
| 62 | LSB | IN | MECHANISM MODE DETECT (B) |
| 63 | LSC | IN | MECHANISM MODE DETECT (C) |
| 64 | REC_SAFETY | IN | REC SAFETY SWITCH DETECT (SW ON: L) |
| 65 | D.FG_IN | IN | DRUM FG PULSE INPUT |
| 66 | D.PG_IN | IN | DRUM PICKUP PULSE INPUT (SWITCHING PULSE) |
| 67 | C.FG_AMP_OUT | OUT | SET-UP OUTPUT FOR CAPSTAN FG AMPLIFICATION FACTOR |
| 68 | C.FG_IN | IN | CAPSTAN FG PULSE INPUT |
| 69 | AMP_VREF_OUT | OUT | AMP CIRCUIT REFERENCE VOLTAGE OUTPUT |
| 70 | AMP_VREF_IN | IN | AMP CIRCUIT REFERENCE VOLTAGE INPUT |
| 71 | AVSS | - | GND |
| 72 | AMP_C | IN | CAPACITOR CONNECTION TERMINAL FOR CONTROL AMP CIRCUIT |
| 73 | AVCC | - | SYSTEM POWER |
| 74 | CTL_+ | IN/OUT | CTL(+) SIGNAL |
| 75 | CTL_- | IN/OUT | CTL(-) SIGNAL |
| 76 | CTL_AMP_OUT | OUT | CTL PULSE OUTPUT |
| 77 | LOCK(L) | IN | TUNING PLL LOCK DETECT: L |
| 78 | AGC_CTL/BS_DEC[H] | - | NC |
| 79 | START SENSOR | - | NC |
| 80 | AFC/JUST CLK | IN | TUNING CHECK / NC |
| 81 | LED | IN | NC |
| 82 | VIDEO ENV | IN | AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL |
| 83 | A.ENV/IND[L] | IN | AUDIO PB FM ENV. INPUT / NON HiFi MODE: L |
| 84 | END SENSOR | IN | END SENSOR |
| 85 | KEY1/IND[L] | IN | OPERATION CONTROL SIGNAL / NC |
| 86 | KEY2/IND[R] | IN | OPERATION CONTROL SIGNAL / NC |
| 87 | KILLER_DET/BS_ANT/COMPU_OUT | OUT | NC / NC / A/V COMPULINK OUTPUT |
| 88 | NORM/S | IN | |
| 89 | WIDE_DET | IN | WIDE ASPECT DETECTION |
| 90 | TU_I2C_DATA | IN/OUT | SERIAL I/O DATA FOR TUNER |
| 91 | J4/BIL_SEL | - | NC / NC |
| 92 | J5/V.UP[H] | - | NC / NC |
| 93 | J6/V.UP2[H] | - | NC / NC |
| 94 | CAP_REV[L] | OUT | CAPSTAN MOTOR REVERSE CONTROL (FWD: H/REV: L) |
| 95 | J3/STB | OUT | NC / STROBE (FOR FDP DRIVER) |
| 96 | S.CLK | OUT | SERIAL DATA TRANSFER CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC |
| 97 | S_DATA_FRSYS | OUT | SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC |
| 98 | S_DATA_TOSYS | IN | SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO THE FDP DRIVER |
| 99 | LMC3 | OUT | LOADING MOTOR DRIVE (3) |
| 100 | JSA | IN | INPUT FOR THE JOG SHUTTLE |

## 4.19 SYSTEM CONTROL BLOCK DIAGRAM

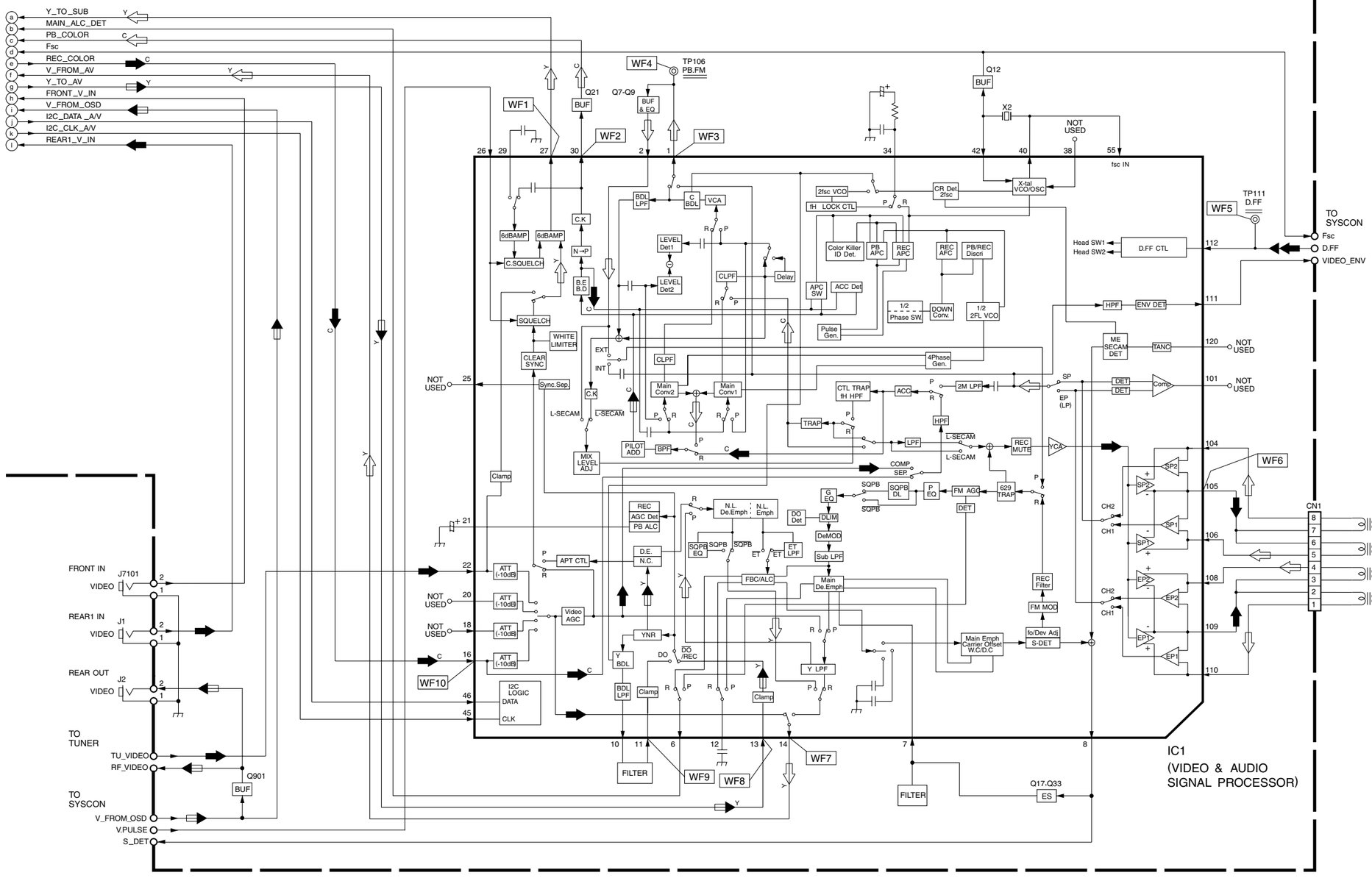



Note : For the waveforms in this block diagram, refer to page 4-31.

## 4.20 VIDEO BLOCK DIAGRAM

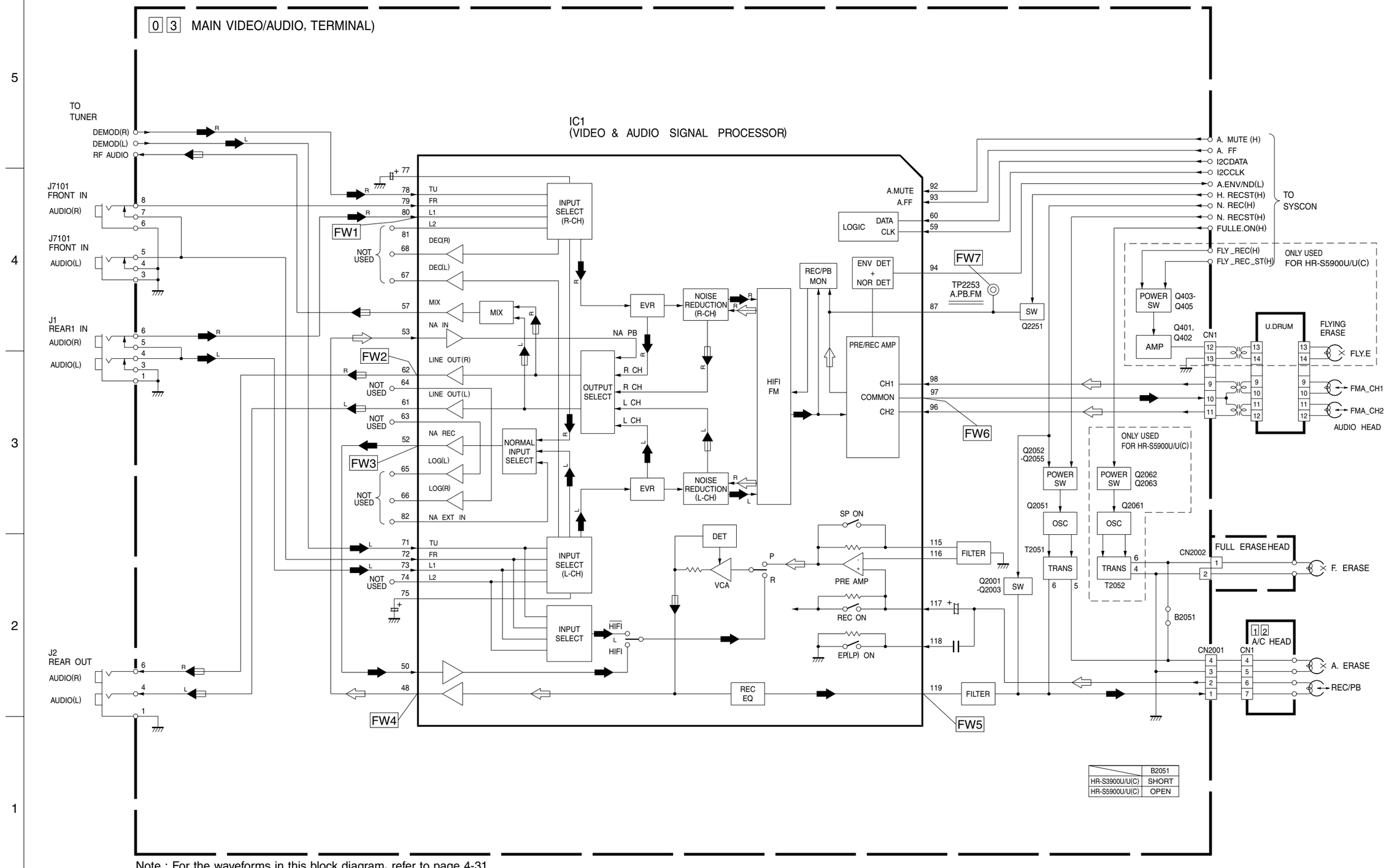



Note : For the waveforms in this block diagram, refer to page 4-31.




Note : For the waveforms in this block diagram, refer to page 4-31.

## 4.21 AUDIO BLOCK DIAGRAM




| | B2051 |
|---|---|
| HR-S3900U/U(C) | SHORT |
| HR-S5900U/U(C) | OPEN |

Note : For the waveforms in this block diagram, refer to page 4-31.



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